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DIESEL RAILWAY TRACTION

The December issue of this RAILWAY GAZETTE *publication, illustrating and describing developments in Diesel Railway Traction is now ready, price 2s.*

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THE RAILWAY GAZETTE
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The International Railway Congress in Rome

THE fifteenth session of the International Railway Congress will be held in Rome in October next year. As stated in an editorial article in our December 17, 1948, issue, the invitation was extended by the Italian Government and accepted at a meeting of the Permanent Commission of the International Railway Congress Association in December, 1948. The fourteenth Congress, the first since the war, was held in Lucerne in 1947, and one was last held in Rome in 1922. The interval between congresses has varied in the past from two to five years, except for the gaps between 1910 and 1922, and between 1937 and 1947, dictated by the two world wars. Fifteen questions are down for discussion, three to each section: Way & Works; Locomotives & Rolling Stock; Working; General; and Light Railways & Colonial Railways. Questions of particular interest to British railway officers include a discussion of the most appropriate measures for keeping traffic by full wagon-loads in the hands of the railway, improvements in rolling stock construction in view of increasing mileage between repairs; and traffic conditions which justify the construction, or the retention, of a railway. The names of the reporters so far announced include eight British and two Dominions and Colonial railway officers.

* * * *

Support for T.U.C. Wages Policy

On November 25, the approval of the General Council of the T.U.C. was given to the proposal of its special economic committee, that all affiliated unions should postpone their wage claims while the retail price index, now at 112, stays below 118. The same day the Executive Committee of the National Union of General & Municipal Workers unanimously decided that in this matter it was in the best interests of its members to support the T.U.C. This, together with the further resolution passed on a card vote at the same meeting, refusing to support the Confederation of Shipbuilding & Engineering Unions in its claim for a £1 a week increase, may have a considerable influence on other constituent unions, some of which are already known to be in favour of postponing their claims until a more appropriate time. Regarding the railwaymen, delegates of the N.U.R. and the R.C.A. met on November 24 to discuss the N.U.R. minimum wage proposal, though so far the R.C.A. has given no indication of its intention to support this claim. At another meeting on November 25, as is reported on page 658, the Railway Executive turned down the claim of the railway shopmen for a "substantial" increase in pay.

* * * *

Road Haulage Liaison

Though liaison may not dispose of all the problems arising from the operation of the Transport Act, 1947, there is no doubt that it can help considerably towards promotion of better understanding between all the parties concerned with its working. Bearing this point in mind the various Executives of the B.T.C. and the Road Haulage Association have issued a joint statement outlining the steps now being taken to ensure that the liaison machinery existing shall work as smoothly as possible. Although the Act gives the B.T.C. extensive powers, there is still left a considerable field in which the independent road hauliers have a substantial interest, and by making use of the complete system of contact provided at all levels full regard will be paid to the part which independent hauliers can play, the Executives agreeing not to encroach unfairly in this field. The statement refers to the necessity for avoiding competition on uneconomic lines, which would lead to higher costs and lower standards of service, cases where the R.H.A. feels that the Executives have made unnecessary additions to their fleets for short-distance work, and to the preservation of existing contracts.

* * * *

Training and Education of Railway Staff

In order that there may be the closest co-operation with the trade unions in the development of training and educational arrangements for railway staff, there has been formed, at the invitation of the Railway Executive, a British Railways Joint Training & Education Advisory Council, composed of representatives of the Railway Executive, the National Union of Railwaymen, the Railway Clerks' Association, the Associated

Society of Locomotive Engineers & Firemen, and the trade union side of the Railway Shopmen's National Council. The new council will consider special training schemes for the higher administrative posts, vocational training, promotional training, engineering and trade apprentices training, training for supervisors, use of residential schools, and other matters relating to the training and education of railway staff. The council will make recommendations to the Railway Executive. While the development and widening of the arrangements for training and education must necessarily be a gradual process, the Railway Executive intends that every opportunity shall be given to all sections of the staff, and there will be the widest measure of co-operation with educational authorities. The staff will be kept informed of the facilities that are available and suggestions will be considered by the council.

* * * *

Large-Scale Railway Plans by Air Photography

A recent paper by Mr. A. E. Bromilow, Engineer, Way & Works Branch, Victorian Government Railways, describes how aerial survey is now being adapted for the preparation of large-scale plans required by the Railways Department. This achievement is the result of extensive preliminary work involving the use of various types of aircraft suitable for different speeds, flying at various heights, several kinds of camera, and different methods of photographic enlargement. The experiments culminated in the placing of a contract for the preparation of aerial plans of about 160 route-miles of line, including the Melbourne area. The scale of these plans is 100 ft. to an inch, and this has been standardised for all plans required for location and record purposes. For more detail work, such as yard track layouts, a scale of 40 ft. to an inch has been standardised. A novel method has been adopted for making mile- and half-mile-post locations visible from the air. One of the greatest advantages of this method of plan-making is its speed, and it is remarkable that the aerial photographic plans are accurate to scale within plan limits. The flying is done in sunlight to obtain shadows showing the shapes of structures including gates and fences.

* * * *

Collection of Locomotive Models and Drawings

After discussions between the Railway Executive and Societies interested in the preservation of historic locomotives it was agreed that, having regard to the difficulties of cost and maintenance involved in the preservation of actual locomotives in any numbers, examination should proceed of an alternative proposal for establishing a collection of models and drawings to portray the principal types which mark important development stages. With a view to developing this proposal, a small joint committee has been set up under the chairmanship of Mr. D. S. M. Barrie, members representing the Railway Executive being Mr. R. C. Bond and Mr. E. S. Cox, and of the Societies, Mr. A. Stowers and Mr. G. R. Grigs. Among the questions under examination is the extent to which suitable models are already available. While this investigation is proceeding the Railway Executive is safeguarding from premature disposal any locomotive nameplates, and so on, which may become surplus through the withdrawal of engines, and which may be considered as being of historic interest. With regard to the future preservation of actual locomotives, the Railway Executive, though emphasising the problems of accommodation and expense, points out that it has not definitely precluded this possibility, and has agreed that certain existing locomotives shall not be scrapped before the Societies have been consulted.

* * * *

Time Interval Train Services

Sir Eustace Missenden's recent reference to future train services "based to a much greater extent on the time-interval principle" reminds us of the considerable advances already made in this direction—the most noteworthy case being on the Fenchurch Street and Southend section of the Eastern Region, where, in addition to the acceleration already mentioned in these columns, an hourly fast service now runs, at the hour, from each end, and usually makes the journey in an hour, though intermediate stops vary. The Edinburgh and Glasgow services, over the old North British route, were increased and standardised, so far as practicable, in 1948—though more trains, in this case, did not always mean shorter ones—and for many years the Newcastle, Sunderland, and West Hartlepool services on the old North Eastern Railway have been arranged on fixed time-intervals. The L.M.S.R. group never advanced far in this direction, save as regards the St. Pancras and Manchester services, but Liverpool and Manchester trains over two routes still work almost entirely to regular departure times, though the old L.N.W.R. hourly service, which dated from October, 1877, has vanished, and Manchester and Bradford trains once approached very nearly to standardisation at 25 minutes past the hour from Manchester Victoria. On the Southern Region, a dense suburban electric service long ago compelled the adoption of regular express timings, almost the only exceptions to the rule today being the 3.20 and 4.45 departures from Waterloo to Bournemouth, and the 10.50, 12.50, and 2.50 to the West of England, which, as our contemporary, *The Railway Magazine*, has pointed out, have ample time allowed them to revert to the standard 11 a.m., 1 p.m., and 3 p.m. departures, and standard express departures are now the rule from Charing Cross at 15 and 25 minutes past the hour to Folkestone and Hastings, and from Victoria at 35 minutes past the hour to the Kent Coast. Opinion has always differed sharply as to whether the adoption of fixed-interval departures justifies the timetable alterations necessary to secure it, but we believe the principle to be of value to public and staff alike.

* * * *

Diesel to Electric Conversions in Sweden

On some secondary lines in Sweden where traffic is light, it has been customary to use diesel railcars for passenger services, although goods trains are worked by standard types of electric locomotives. Increased costs of imported oil, and diesel stabling problems arising from the severe winter climate, have turned attention anew to the use of the existing electric power for passenger services, and the Swedish ASEA company has developed equipment designed for economic operation of railcars from the 15,000-V. single-phase overhead supply. The principal items are an oil-cooled transformer and a 170-h.p. motor, each accounting for approximately one ton of the total weight of 3½ tons. In a recently converted vehicle using this apparatus, the motor is coupled to the propeller shaft of the former diesel transmission system, but clutch and gearbox are dispensed with, so that the railcar has more in common mechanically with a trolleybus than with the usual power bogie electric unit. Five running speeds are provided by suitable tappings on the transformer, the last of which is arranged in conjunction with the special characteristics of the motor to maintain the full rated output at high speeds, the normal falling-off in this respect having been an important factor in the original decision to use diesel power. As the motor is not bogie-mounted, the standard equipment is applicable to vehicles of any gauge, and a 3-ft. gauge railcar has been converted similarly. It is proposed to use the same type of apparatus in small shunters.

* * * *

Liverpool-Southport Line Power Supplies

Since the first section was electrified in 1904 various changes to meet increasing traffic demands have been made in the power supply equipment of the Liverpool to Southport line of the former L.Y.R. and its extensions. At one stage the installation of glass bulb rectifiers at two substations represented the first application of this type of apparatus on an electric railway. In the course of the modernisation of power supply arrangements just completed by the opening of the new control room at Hall Road (see page 643) the former railway generating station has been closed and power is taken at 33 kV. from the Merseyside & North Wales Electricity Board. Distribution is effected at 11 kV. over railway feeders to 14 substations, all of which now have glass bulb rectifiers, mainly of the latest types, although at one substation the long-life characteristic of this type of apparatus has been demonstrated in a practical manner by the retention in modified form of two glass bulb equipments installed in 1932. The rectified supply to the track is at 630 V. Glass bulb rectifiers are convenient to instal, and lend themselves to a straightforward air-cooling system, while replacement of bulbs is a simple operation. They normally are more compact than the steel-tank type, but the development of the latter rectifier without a vacuum pump, has reduced materially the installation requirements associated with it.

Salute the Seasons

Accustomed to criticism by foreign visitors of their demeanour in railway carriages, British travellers will feel surprise at a recent jibe by their own Minister of Health. It is true that Mr. Bevan spoke of the inter-war years, but the frigid aspect of which he complained is unlikely to be thawed by the higher cost and greater discomfort of business travel today. Perhaps, too, his deprecatory reference to the carrying of rolled umbrellas arose from a personal dislike of this highly individualistic form of health insurance. Let Mr. Bevan observe and admire the rarity with which a superficial glumness among business travellers flares up into actual bad temper in the stress of rush-hours. London Transport once counselled a jocund approach to travel discomforts, assuming that just as courtesy aids service, so levity alleviates suffocation, but the campaign waned, presumably because it was unnecessary. It may be objected by some that aloofness towards strangers is an attitude of mind of the Right which is undesirable on the international plane. Probably it is no more embarrassing than an equally characteristic tendency in some quarters of the Left to form societies for the promotion of friendly relations with people who dislike us intensely.

* * * *

Higher Freight Charges

THE deterioration in the financial position of the British Transport Commission, which has been apparent throughout this year, has now reached the stage when it has been found necessary to make an application for higher freight and dock charges. The Minister of Transport announced in the House of Commons on Monday last that the Transport Tribunal, sitting as a consultative committee, will meet forthwith to advise him on a claim that rail freight and parcels traffic, other merchandise, and livestock by passenger train, should bear increased charges of 16⅔ per cent.; canal charges to be raised by a like amount. Dock dues on coastwise vessels and cargoes, it is proposed, should be increased from 25 per cent. over 1939 levels to 50 per cent., and all other dock charges now 75 per cent. above 1939 should be raised to 100 per cent. No increase is proposed in passenger fares.

Mr. Barnes made it clear that the Tribunal is to regard the matter as one of extreme urgency, particularly in relation to the proposed rail charges increase. The procedure which is now being taken is in accord with the provisions of the Transport Act. 1947, and is an emergency measure designed to stem the Commission's heavy weekly losses. It will not prejudice the level of charges when the charges schemes, which have been under consideration practically since the inception of the British Transport Commission, are brought forward. The effect of the increases will be to bring railway charges, which are now 155 per cent. of 1939, up to 181 per cent. of that level.

In his statement to the House of Commons, Mr. Barnes confirmed recent expectations that the British Transport Commission's net revenue deficiency for the current year was likely to exceed £20 million as compared with the deficit of £4·7 million in respect of 1948. He added that it would be greater next year on the basis of existing charges, quite apart from any question of recouping the accrued deficiency. The Transport Tribunal will consult with representative bodies of traders and shipping organisations and take their advice into consideration in arriving at its decision. The advice which these representative bodies will tender is not in much doubt, for already a number of leading trade and shipping organisations and industrialists has expressed alarm at the effect which higher railway charges will have on export prices and on the cost of living in this country. On the other hand, one of the salient factors which cannot be overlooked in an application of this kind is that the average weighted expenses of the railways have risen by 120 per cent. as compared with pre-war, whereas the general level of railway charges has been increased only by 55 per cent.

The raising of railway charges since the last war has not been on so wide a scale or so speedy in its imposition as was the case after the 1914-1918 war. Then, railway charges were quickly raised by 100 per cent. The present decision has been forced on the British Transport Commission by the steady loss of traffic which has occurred, and to an even greater degree by the constant increase in labour and material costs which it has been forced to bear, ever since it took over the internal transport of the country. Even before the nationalisation of transport, costs and revenues were moving in opposite and adverse directions. Yesterday, the House of Commons opened a debate on the first report of the British Transport Commission, and there is little doubt that, when the claim for the higher charges comes before the Transport Tribunal, there will be a searching inquiry by industrial organisations as to whether there is no alternative to the steps proposed by the Commission.

It is noteworthy that the application for higher charges has been confined to freight traffics, which have featured least in the recent decline in railway revenue receipts. The greatest fall has been in passenger revenue. Probably the Commission and the Railway Executive are convinced that any attempt to make an upwards adjustment in fares can lead only to a further diminution in receipts.

* * * *

New Zealand Government Railways

IN the report for the year ended March 31, 1949, of the New Zealand Government Railways, of which Mr. F. W. Aickin is General Manager, the Minister of Railways, the Hon. R. Semple, attributes record receipts to rate and fare increases in force throughout the year, as compared with only seven months of the preceding year. In passenger and allied traffics, despite a decline in Armed Forces movement, increased revenue was due mainly to the rise in passenger fares and parcels, baggage, and mail rates, and to a marked increase in season-ticket journeys. In goods traffic, some three quarters of the increase in receipts was due to the rise in rates, and the remainder mostly to increased timber movement, which offset a marked transfer of sheep traffic to road hauliers. The railway-operated road motor services showed a revenue increase of nearly 10 per cent., but expenditure in this branch rose 13 per cent. largely through a rise in wages.

Some of the more important results are given below:—

	1947-48	1948-49
	(millions)	
Passenger journeys	25·89	26·17
Goods tonnage conveyed	9·52	9·66
Total train-mileage (revenue)	13·71	13·89
	(£ millions)	
Coaching traffic earnings	3·24	3·32
Goods traffic earnings	10·49	11·75
Total operating revenue	13·96	15·34
Net operating loss	1·13	1·45

Gross expenditure rose 11 per cent., due to increased wages and man-hours, and to the rise in costs, more particularly of imported fuel and stores. The report points out that the railways, by using imported fuel oil and coal, freed the cheaper New Zealand coal for industry and domestic purposes, thereby carrying an extra burden on behalf of the community. The withdrawal, however, in August, 1948, of the overseas exchange rate of 25 per cent., and the bringing of New Zealand currency into parity with sterling, lowered the price of imported coal, and the issue rate for fuel oil had fallen by the end of the year.

The report, in deprecating the application of ordinary tests of commercial efficiency to a public utility, draws attention to increased efficiency in the rise in the ton-miles per man-hour from 53 in 1938-39 to 61 in 1948-49; and in the percentage of net to gross ton-miles of wagons, which rose from 37·2 to 39·8 in the last ten years, when also gross ton-miles per goods train-hour rose from 2,936 to 3,612. The Minister considers that further rate and fare increases, by disturbing what should be a stabilising factor in general costs, would not be in the public interest, and would tend to nullify the apparent good effect of the exchange-rate adjustment. Steps are being taken to rationalise rail and railway-operated road motor services, and in association with the Minister of Transport efforts are being made to co-ordinate all transport services, whether State or privately owned.

Passenger train services were improved, for example, by the restoration of the "Auckland-Wellington Limited" express to run six days weekly, and by the acceleration of and provision of new rolling stock for the Christchurch-Dunedin-Invercargill Limited expresses (described in *The Railway Gazette* of August 12 and October 28). As recorded in our September 9 issue a number of motor coaches and trailers have been ordered from Great Britain for the Wellington electric suburban services.

A Great American Signal Engineer

THE death of Mr. A. H. Rudd, recorded in our Personal columns this week, has removed an outstanding figure in railway signalling in America. He retired in 1937 from the position of Chief Signal Engineer of the Pennsylvania system, after spending over 50 years in signalling work. Operating conditions in the United States, markedly different from those in Great Britain and most other European countries, led to the early introduction of automatic signalling on a considerable scale, and the production of highly-developed signal mechanisms and other equipment.

In the field of power interlocking systems, also, the American signal engineering achieved very praiseworthy results, as far back as the beginning of this century, and numerous important installations took place during the years when Mr. Rudd was in active work. The variety of designs and methods of working, and the diversity of types of signal and signal aspects, led the Pennsylvania Railroad and the important system of lines associated with it, known as the "Lines West," to seek a uniform system of signalling; and in that task Mr. Rudd was associated with the late Mr. Frank Rhea, drawing up, with him, an exhaustive report, the details of which were not made known generally for a long time afterwards, although the principles it advocated were carried into effect on the Pennsylvania lines and found supporters on others.

Mr. Rudd was elected an Honorary Member of the Institution of Railway Signal Engineers in this country on its incorporation, and not long afterwards sent a paper to it, setting forth a comparison between American and British signalling practice. He also, during the recent war, contributed a valuable article to its *Journal*, entitled "Fifty Years of Signalling in the United States." He is probably best known now for the work he did in association with Dr. William Churchill to develop and apply the position-light signal, originally called by him the beam light signal, which was originally installed in connection with the electrification of the Philadelphia suburban lines, but which later came to be adopted as standard by the Pennsylvania Railroad and some others associated with it.

* * * *

A Sheaf of U.S.A. Statistics

IN October, the Bureau of Railway Economics, Association of American Railroads, issued its thirty-third statistical summary of the operating results of Class 1 railways. Comparative figures for the years 1929 and 1939 to 1948 are set out clearly in 14 tables, covering the whole field from property investment to locomotive coal consumption, and the quantities of rail and sleepers laid in the track. Many of the 1948 statistics have been reviewed in previous articles, and early in January preliminary figures for 1949 will be received with the despatch characteristic of American accounting methods. We propose, therefore, to restrict our comments to a fifteenth table which is entirely fresh and contains a great deal of interesting information.

The table in question is the only one in the bulletin which is not comparative. It gives for some 260 traffics the number of wagons forwarded in 1948 with full loads, the tonnage they carried, and the gross revenue they earned. The contents of 35,800,000 wagons are classified under these distinctive heads, the total weight of traffic loaded being approximately 1,489 million short-tons. The gross carriage charges amounted to $7,828 million. In addition to this, something more than 18¼ million tons of less-than-wagon-load traffic originated and would be sent for transhipment as a general rule. These "smalls" are not classified.

By far the largest item in the list of traffics was bituminous coal—7,434,000 wagons conveying over 430 million tons. The average wagon-load was not far short of 58 tons and produced a revenue of $158. Iron ore gave an even larger load of 61 tons for 1,735,000 wagons, hauled for a payment of $96 apiece. At the other end of the scale, motorcars were loaded in 288,000 wagons to a weight of only 6½ tons, but each wagon earned $315.

The average capacity of an American wagon was 52 short-tons and the average weight it carried of all full-load traffic was 42 tons. Both capacity and actual load will continue to rise, as many orders have been placed recently for 70-tonners. The table below shows how the wagon user varies with the nature of the commodity forwarded.

Commodity	Number of wagons in 1948	Average wagon-load (Tons)	Average revenue per wagon (Dollars)
Wheat	794,100	53	286
Sugar beet	154,300	42	42
Oranges and grapefruit ...	115,600	22	618
Cotton in bales	214,700	17	191
Tobacco, unmanufactured	61,900	14	172
Watermelons	26,500	13	288
Cantaloupes	27,200	11	484

So far as we are aware, a commodity analysis in similar detail has not been compiled in this country. Before the war, the Ministry of Transport published the tonnage and receipts for 25 selected traffics passing by rail in large quantities, mostly at station-to-station rates. The British Transport Commission has not included any statement of that kind, either in the periodical series of *Transport Statistics* or in its 1948 report, which is a pity, because precise statistics are more valuable than the general comments on traffic trends and wagon availability which are made in the section of the report dealing with the Railway Executive.

* * * *

Standard Locomotives in India

THE far-reaching changes in railway operation which can result from a change in the quality of coal used on locomotives, have been set out in a paper* to the Institute of Engineers (India) by Dr. H. J. Nichols, retiring Member for Engineering of the India Railway Board. The subject is one that commands general attention throughout the world and Dr. Nichols handled the subject in such a way that attention was held throughout. He pointed out that lower-grade Indian coal had a higher ash-content than that formerly used. This not only required more coal to be fired per lb. of steam produced, but also necessitated the use of a thinner fire to prevent choking by accumulations of ash; as a result, considerably larger grate areas must be used. There was, however, a limit to the size of grate that could be fired manually, and, as some of the existing broad-gauge locomotive designs in India were already near this maximum, it followed that the Railway Board found itself faced with the alternatives of either adopting mechanical stoking on a wide scale, or of reducing train weights to suit manual firing with the low-grade coal.

After prolonged consideration of all factors the Railway Board decided on the latter course. As a result, a standard broad-gauge freight-train weight of 1,500 tons was adopted, and for passenger services a normal train weight of 350 tons was introduced. This decision involved an increase in the total number of trains worked to avoid reductions in the traffic moved, while at the same time intensive research and experiment was put in hand with a view to reducing the tare-weight of carriages and wagons.

The paper sets out the arguments for and against light *versus* heavy trains. The advantages of the light train were considered to be:—

(*a*) Ability to burn lower-grade coal and continue hand-firing.

(*b*) Economies in wear and tear of the track through lighter axle-loading.

(*c*) Avoidance of capital expenditure and the provision of long sidings and second lines.

(*d*) Reduction of delay at starting and stopping stations in making up trains.

(*e*) Reduction in wagon delay in awaiting full train-loads.

(*f*) Increased daily mileage of locomotives and wagons from the above causes, and also through increased ability of locomotives to make up lost time.

(*g*) Consequent quicker movement of freight.

On the other hand, the disadvantages of the light train were considered to be:—

(*a*) Loss of line capacity on heavy-traffic sections unless double-tracking were carried out.

(*b*) The increased number of locomotives and brake-vans required (although of smaller individual size and cost).

(*c*) Capital expenditure in increasing the reception capacity of certain yards.

(*d*) Some additional staff.

* Presented to the Institute of Engineers (India) by Dr. H. J. Nichols in September, 1948

The running of lighter and more frequent trains in the United Kingdom has been advocated by *The Railway Gazette*, and it is, therefore, interesting to note some of the reasons leading to a similar conclusion in a country so dissimilar in railway conditions as is India. The principle of running lighter and more frequent trains where they can be run without doubling or quadrupling the track is one that naturally appeals to the operating man. Dr. Nichols has pointed out the corresponding disadvantages, but he has then proceeded to outline a scheme that will give economies which may outweigh them. As a result of a close study of the conditions, he is of the opinion that the maximum axle load of main lines can be reduced to 18½ tons, and on branch lines to 16½ tons. These reductions will permit the use of lighter rail sections, wider sleeper spacing, and some saving in steel for bridges, while the fact that India will one day be a large producer of aluminium causes Dr. Nichols to incline to the use of this metal to economise both in weight and steel.

It will be seen that the paper makes out a strong case in favour of lighter trains, but until the statistics on which the Railway Board took its decision are made public, it will not be possible for others to weigh the relative economies of light *versus* big trains in India. Even when these figures are available, they will be of limited application to other countries, bearing in mind the many factors which vary with local conditions.

The second part of the paper outlines the classes of locotive that are being produced to meet these altered operating conditions, and we reproduce below a table of the new types given by Mr. W. Cyril Williams in his presidential address to the Institution of Locomotive Engineers in October.

These new types all have bigger ratios of grate area and firebox volume to suit low-grade coal, together with rocking and dump grates and hopper-ashpans to dispose of the increased ash. Their axle loads conform to the new standards laid down by the Railway Board, and the two passenger designs, the "WP" and "WL" classes, are intermediate in hauling power between the former "XA," "XB," and "XC" designs, while the freight design, the "WG," ranks between the former "XD" and "XE" types. These three types, together with a Garratt design for heavy-grade sections, make up the whole range of long-distance standard locomotive classes.

The standardisation of locomotives is an ideal which is now being followed in many countries, as it is realised that the existence of a large number of different types of steam locomotive places them at an economic disadvantage when compared with highly standardised diesels. On the other hand, the standardisation of steam locomotives can be carried too far, as actually occurred in India in the past, where the 4-6-0 metre-gauge locomotives (which are still found there in large numbers) frequently had to operate with coal, and in conditions unsuited to them. As a consequence, their coal consumption, and frequently their maintenance charges, were higher than would have been those of locomotives specially designed for local conditions.

Railway officers must, therefore, endeavour to steer a middle course in the number of locomotive types, and here Dr. Nichols contributes another interesting point, when he talks of the application of the "Meccano" principle to locomotive design. The Railway Board's final intention is complete standardisation of all component parts of locomotives, which can be built up into a range of designs for all purposes. In principle, this is excellent, but the practical application of the system has been a problem to locomotive engineers for many years. Where standardisation can go farther is in boiler fittings. Pins and bushes also can be highly standardised, but other wearing parts, such as piston and valve rings, wheel types, brasses, and brake shoes, cannot be standardised beyond a range of sizes. The standardisation of boilers and their interchangeability in various engine classes is, of course, a desirable feature where it can be done.

If the "Meccano" principle is to be followed to its logical conclusion, it would appear that at a later date some of the present designs proposed by the Railway Board will require modification to improve standardisation of components. Further, the fact that seven types of boiler will be required for eight locomotive classes, leaves room for improvement. It should not be forgotten, however, that India, at the end of the war, was extremely short of locomotive power, and the suburban and shunting designs that have been made standard are a compromise between the ideal and what has been found practical.

Whether four designs of locomotive for long-distance work will prove adequate, is a question only time will decide. At present, there are large numbers of non-standard locomotives in India alongside the new standard designs, and only when these are withdrawn will the Board be able to decide whether to increase the number of standard designs or not. All we can say at the moment is that the Railway Board has made a firm step in the direction of minimising the number of locomotive types and of component parts, and has left itself in a position to modify or increase the number of standard classes as experience may dictate. It should not be forgotten that India intends to build its own locomotives in future, and when the new Chittaranjan Locomotive Works is in full operation, the present difficulties in obtaining fully standardised locomotives from various makers will be lessened.

NEW STANDARD LOCOMOTIVES, INDIAN GOVERNMENT RAILWAYS

Gauge	Class	Type	Service	Axle load, tons	Coupled wheel diameter	Cylinder bore and stroke, in.	Grate area, sq. ft.	Boiler pressure, lb. sq. in.	Tractive effort, 85 per cent. b.p., lb.
5 ft. 6 in.	"WP"	4-6-2	Standard passenger	18·5	5 ft. 7 in.	20½ × 28	46·0	210	30,600
5 ft. 6 in.	"WL"	4-6-2	Medium passenger	16·5	5 ft. 7 in.	19¼ × 28	38·4	210	27,640
5 ft. 6 in.	"WM"	2-6-4 T	Suburban passenger	16·5	5 ft. 7 in.	16 × 28	24·0	210	19,100
5 ft. 6 in.	"WU"	2-4-2 T	Light suburban passenger	16·5	5 ft. 1½ in.	13 × 26	18·5	210	12,750
5 ft. 6 in.	"WG"	2-8-2	Standard goods	18·5	5 ft. 1½ in.	21⅞ × 28	46·0	210	39,000
5 ft. 6 in.	"WE" G	4-8-2 + 2-8-4 Garratt	Heavy goods	17·0	4 ft. 8 in.	20½ × 26 (4)	70·0	210	69,660
5 ft. 6 in.	"WW"	0-6-2 T	Light shunting	17·0	4 ft. 3 in.	16 × 22	14·0	210	19,710
5 ft. 6 in.	"WS"	2-10-6 T	Heavy shunting	17·0	4 ft. 0 in.	20½ × 26	30·0	210	40,630
Metre	"YP"	4-6-2	Standard passenger	10·5	4 ft. 6 in.	15½ × 24	30·0	210	18,400
Metre	"YL"	2-6-2	Medium passenger	8·0	3 ft. 7 in.	12½ × 22	17·75	210	13,680
Metre	"YM"	2-6-4 T	Suburban and light shunting	9·0	4 ft. 0 in.	13 × 22	12·0	210	13,800
Metre	"YG"	2-8-2	Standard goods	10·5	4 ft. 0 in.	16½ × 24	30·0	210	23,450
Metre	"YE" G	4-8-2 + 2-8-4 Garratt	Heavy goods	10·0	4 ft. 0 in.	16 × 24 (4)	48·75	200	43,520
Metre	"YS"	2-10-6 T	Heavy shunting	10·5	3 ft. 3 in.	15½ × 22	14·87	210	24,100

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Railway Timetable Maps

The Railway Executive,
222, Marylebone Road,
N.W.1. November 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your correspondents who recently have referred to this subject may care to know that the present arrangements are only temporary. The Railway Executive has already decided that as soon as practicable after the major adjustments now in course of being made to the Regional boundaries have been settled, each section of the timetable will include a map showing only the routes and stations referred to in that book.

Travellers are far from unanimous as to what sort of timetable map they like best, but it is hoped this decision will prove acceptable to the majority.

Yours faithfully,
D. S. M. BARRIE,
Public Relations Officer

Pulsating Smokeboxes

31, Alphington Street,
Exeter. October 29

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Having stood upon the overbridge at Queen Street and watched a "West Country" class locomotive bringing a train from St. Davids, complete with pulsating smokebox, I feel competent to deal with Mr. Woodhouse's comments in your October 28 issue.

If this were a mirage, it is most peculiar that the rise and fall of the pulsations corresponded with the blast from exhaust. It would be most difficult to confuse the "shining" of rails on a hot day with the definite rise and fall (of some six inches) present in this locomotive.

A little later I observed this engine running light in the sidings beside the up line of the incline; the smokebox still pulsated. Thus I concluded that it was a matter for the C.M.E.'s department.

I regret, in view of the amount of interest caused since, that I did not note the number of this engine. I have not since observed any similar pulsations—even on a hot day!

Yours faithfully,
A. J. PARKES

Suburban Coach Design

12, Fairholme Avenue,
Gidea Park, Essex. October 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In his letter published in your issue of October 14, Mr. W. S. Clarke advocates the use of London Transport rolling stock on the Southern services. Heaven forbid that this should happen! It is the worst ventilated rolling stock in the London area and I think the riding (of the surface line stock) would be materially improved if the swing links were removed from the bogies, and rollers bearing direct on bearing pads on the bogie frames used in their stead. Swing links have, in theory, a self-centring action on the car body when traversing curves, but this only holds good for a weighty body and light bogies; this stock (the L.T.E. metadyne type stock and the trailer cars of similar outline on the District Line trains) has a light body and weighty bogies, which results in that objectionable oscillation from side to side which is always experienced on these cars.

The narrow, horizontal ventilating slots now fitted are useless and it is high time that they were replaced by the double pull-back type as fitted to its experimental car No. 17000 and to all the Liverpool Street-Shenfield stock.

Mr. Clarke says that station stops with compartment stock are excessive. To anyone who has any records of past services or who is a railway engineer this statement is ridiculous.

The highest frequency service ever operated in the London area was operated by the former Metropolitan Railway on the northern half of the Inner Circle. This service, 60 trains per hour frequency at times, included large numbers of compartment stock trains and these are still in operation. In July a companion and I stood on the platform of Liverpool Street (Metropolitan) Station and counted six trains through on the same track in 5¼ min. In one case, we timed two successive trains as follows: Time from first train starting till second train came to rest in platform, 25 sec. If you add to this a station stop of 30 sec. you get a train interval of 55 sec., which equals *more* than 60 trains an hour. I believe the Metropolitan Railway had a standing order that train stopping times in platforms (*i.e.*, time train was at rest) was not to exceed 20 sec., which would make the maintenance of a "train a minute service" an easy matter.

I travel from Earls Court to Mansion House every evening and at Charing Cross the duration of the station stop on the eastbound road for trains going to places east of Bow Road very often exceeds 30 sec., and I have often measured stops of between 60 and 65 sec.—this with the allegedly superior air-worked door, open-car stock.

It is not the design of the stock that dictates duration of station stops, but the design of the station, which at Charing Cross is poor in view of the heavy interchange traffic caused by persons travelling to and from the Bakerloo and Northern lines.

On the eastbound platform, which is eight car-lengths long, the whole of the entrances, exits, and interchange subways are crowded in the two car-lengths at the rear end of the platform. I recently timed the train on which I was travelling, and although the station work for the four front cars was finished in seven seconds it was no less than 65 seconds before the station work for the last two of the eight coaches was completely finished, and this time is by no means unusual.

With regard to the Southern Region lines about which Mr. Clarke is speaking, I would ask: "Are these lines equipped with automatic colour light signals?" If not, why not? I think I am right in saying that the lines in the South Eastern area are still equipped with lock and block and mechanical signals, that is, the lines through Woolwich and the surrounding area.

Colour-light automatic signals should be provided before any alternative is tried; even if for no other reason than the safety afforded by continuous track circuiting and the more efficient aspect displayed to the driver in foggy weather.

Yours faithfully,
R. A. PASCALL

The New Western Region Shunters

London. November 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Once over the visual shock of the "15XX" class of six-coupled shunting tank on the Western Region, described in your issue of October 21—a far deeper one than provided by the "County" class 4-6-0 engines a few years ago—one begins to appraise the design as a design, though still with appreciation of the sacrilege against Swindon traditions. Outside cylinders alone might have been accepted with only faint comment, but outside Walschaerts gear and no pannier to the tank were almost enough for one to anticipate the lack of running plates as well. Yet it must be admitted that in one thing Swindon tradition has been perpetuated: that is, having taken a new thing in hand, a thoroughly good job seems to have been made of it.

It is not, perhaps, unfair to trace in this new design the influence of British Railways and a closer appreciation of what other Regions are doing, for the principle of greater accessibility and ease of maintenance so strikingly embodied in No.1500 is one that owes its real modern rebirth—as distinct from lip-service—to Mr. George Ivatt on the London Midland Region. Those who have piston or piston valve rings to renew in a hurry on a hot engine will rejoice at the forward end of the new class; those whose *forte* is valve gear design or rods will approve the good proportions, the rigid slidebar, and the ample crosshead surfaces; and maligned yard- and station-masters, for whom the class was primarily built, will welcome the short wheelbase as likely to stop on more tracks.

Yours faithfully,
MECHANICAL ENGINEER

A Remarkable Railway Renaissance

"Byways," 20, Queens Road,
Belmont, Surrey. November 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Recent letters in your correspondence columns have referred to the fortunes of the Chicago, Indianapolis & Louisville Railroad, commonly known as the "Monon." One wonders whether similar criticism would have been voiced by anyone who knew the Monon as "a Streak of Rust through Indiana," and on the point of entire abandonment, and who is familiar with its condition today as a highly efficient, though comparatively small, line. The fact that a night train, serving primarily a health resort should be withdrawn, on the inauguration of the winter services hardly seems to warrant such attention, though, as a passenger on one of the train's early trips in 1946, I recall the high hopes of that train's earning capacity.

Some may feel that the enterprise of Mr. John Barriger, whose reputation as an expert on railway operating, railway

finance, and as an engineer, mechanical and civil, is undoubted, should receive encouragement if only for his courage in taking over the presidency of a line in such poor condition. If the critic had been at my side amongst the Monen staff last month and had listened to the programmes, equally of economy and development, outlined by the President, and also seen how the latter's reputation was held in high esteem by his colleagues on other neighbouring and competitive lines, it is doubtful if he would have been so critical.

One feels that perhaps railways in other countries could benefit by the presence of other Barrigers, for they retain great faith in the railway industry and enthusiasm, yet take immense care to assess the financial return to be expected from the alternative opportunities afforded by capital expenditure to improve service to the travelling and trading public.

Yours faithfully,
C. E. R. SHERRINGTON

Station Name Boards

Stepping Stones, Laleham,
Staines, November 21

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—By a great stroke of ingenuity three stations on the Southern Region which serve towns in common with the Western Region have been renamed, namely, Reading South, Windsor and Eton Riverside, and Staines Central, and with great industry and efficiency the Southern Region put up their new name signs.

The Western Region station at Staines has no boards at all showing the name of the station, and the outside of the station has no notice whatsoever to show that it is a station.

Similarly, Putney and Surbiton stations on the Southern Region, which had the latest type of Southern signs in perfect repair, have had these superseded by the new British Railway signs.

This was no doubt experimental, but surely this experiment could have been carried out at stations on other Regions which have no signs whatsoever.

The Southern is noted for the excellence of its station name signs, and surely it would be far more sensible to spend this money, not in altering station names quite unnecessarily, but in providing station name boards at stations on other Regions which have no labels at all.

Yours faithfully,
IAN ALLAN

Wagon Turn-Round

Eynesbury,
St. Neots, November 5

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The unsatisfactory turn-round of wagons described in your article of November 4, would be overcome if the National Coal Board adopted the practice of other countries in storing coal on the ground at the pithead, whence it is afterwards picked up by grab and dropped into railway wagons only when actually needed, instead of being stored in hundreds, or thousands, of wagons which stand for days, and even weeks, congesting the sidings at stations, docks and works. In the U.S.A. a couple of grabs load wagons at the rate of 1,000 tons an hour.

Half the siding space at every colliery, now used for storing wagons of coal, would be released for storing a far greater tonnage on the ground. Loss of production through colliery stoppages, due to so-called "shortage of wagons," would be totally avoided.

The Coal Board should also replace its ancient little 10-ton to 16-ton wagons (always the laughing-stock of every foreign railwayman visiting England, who ridicule them as "toy trucks"), by up-to-date self-discharging 40-, 50-, 60- or 70-ton wagons which, again, would be cleared immediately on arrival at their destinations. The present output of coal would be dealt with by well under 50,000 of them.

The heavy pilferage of coal at night-time from wagons standing in isolated sidings all over the country, would also be avoided. As an example of this loss, a couple of years ago a London coal merchant complained that he lost over £100 worth of coal through pilferage from wagons.

These measures would thus result in a substantial cheapening of storage, transport, unloading and pilfering costs, to the benefit of the iron and steel, gas, electricity, engineering, shipbuilding, shipping, and other trades—enabling them to compete much more successfully abroad. But, in persisting in clinging to their "toy trucks," the coal trade never did have any consideration for them!

Yours faithfully,
E. R. B. ROBERTS

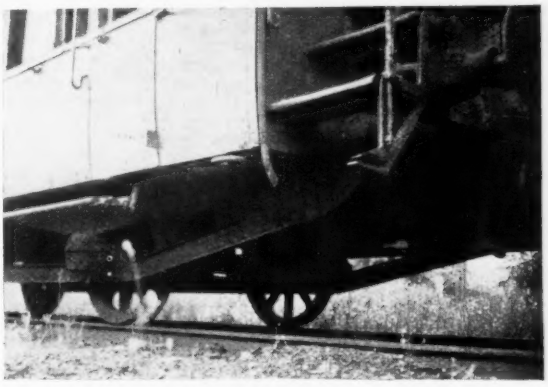
Double-Deck Coaches

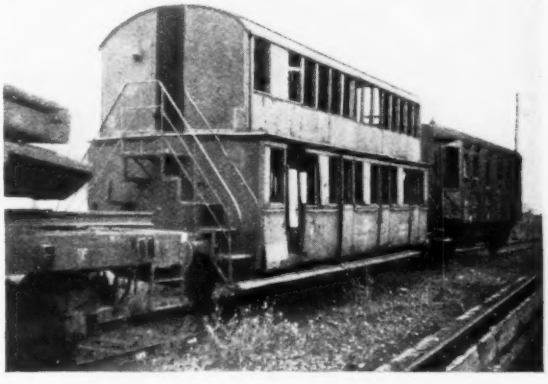
27, Höhenweg, Aachen,
Germany, October 16

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In the course of taking a diploma at the Technical High School at Aachen, I am having to deal, among other things, with the question of double-deck coaches, and I have found the various items of information which have appeared during the present year in your columns a valuable aid to me in this task. I had not before heard of the Bödeli line in Switzerland, and the excellent pictures referring to it in your July 15 issue I find a welcome addition to my handling of the subject.

In the course of a journey not long ago, I came across, quite by chance, an old type of small double-deck carriage. It now stands in a damaged condition at Wehrden-on-Weser Station, and was last used, according to some markings on it, as sleeping accommodation for permanent way staff in the Saarbrücken Division of the Reichsbahn. Presumably it was taken from the rolling stock of the French Eastern Railway.





French-built double-deck coach in Germany

A plate is riveted to one of the under-frame longitudinals, which are bent upwards at the buffer-beam ends, and carries the following wording:—

Se. de CONSTRUCTION
et d'ENTRETIEN
de MATERIEL ROULANT
PARIS 1921

A faded inscription on the lower part of the end of the body of the vehicle says: "TARE 12 800" (kg.).

The dimensions of the coach are approximately as follow:—

Length over buffers	9,700 mm.
Wheelbase	4,000 mm.
Dia. of wheels	900 mm.
Height of floor above rail, carriage empty (The wheels project into box covers)	870 mm.
Height inside lower deck	1,680 mm.
Height inside upper deck, to top of curve of roof	1,710 mm.
Length of body, both decks	7,860 mm.
Width of lower deck	2,650 mm.
Width of upper deck	2,350 mm.

Yours faithfully,
HORST SOMMERFELDT

The Scrap Heap

" Real Eels "

Because the main water tank for watering locomotives at Toton depot, London Midland Region, was not filling satisfactorily, Mr. Horace Jackson, plant attendant, made an inspection and found 13 eels in the water supply pipe from the adjacent canal. That night eel suppers were provided for drivers and firemen of the depot, but hopes of future feasts are fading, as the defective sieve, which trapped the eels, is to be repaired.

* * *

He Just Had to Watch the Trains Go By

A 48-year-old café porter who pleaded guilty at Guildhall recently to stealing £30 from his employers was said to have gone to Newcastle-on-Tyne and then travelled up and down the railway aimlessly until the money was spent.

The porter was said to have made a statement that he had an extraordinary obsession for railways and trains. He said he would spend hours at a time at a railway station watching the trains.

" I don't know why I did it, but I just cannot keep away from railway stations and trains."

He was remanded to December 13 for a medical report.—*From " The Evening News."*

* * *

Cordial Invitation

So far as I can discover, only one man has ever been ordered by the guard to pull the communication cord. This happy fellow is Mr. Charles Richard Wainwright, a Euston Road haberdasher. He was sitting quietly in his carriage one morning as the train pulled out of Paddington.

Suddenly he saw an agitated man in uniform signalling wildly to him from the platform. It was the guard, caught napping by the driver. Slowly the beautiful thought dawned in Mr. Wainwright's delighted mind that he was actually being implored to pull the cord.

Such good fortune has not befallen any man since Kubla Khan found Marco Polo in the desert and gave him a lift home to Xanadu.—*Ian Mackay in the " News Chronicle."*

* * *

100 YEARS AGO

From The Railway Times *Dec.* 1, 1849

Sound and vital economy is now the *desideratum* in railway management. For this shareholders will naturally turn to their Directors, and from them they will demand evidence of its existence. Not only in the departmental service of railways, not only in nippings of small wages, will that evidence be best found: it will be sought in the formation of contracts extending to large amounts, and in the absence of all tinge of favouritism, or evasion in the distribution of patronage.

* * *

First Train Ferry

The conversion in a Port Glasgow shipyard of four tank landing craft to vehicular ferries for the Granton-Burntisland service recalls the fact that a century has passed since the first train ferry in the world, the paddle steamer *Leviathan*, was placed on that Forth crossing.

Built on the Clyde to the order of the old Edinburgh, Perth, and Dundee Railway Company, *Leviathan* was a queer-looking, double-ended vessel with rails on her deck for uniting with an extension on the landing stage of the shore railway lines. The idea of transporting wagons on shipboard was decidedly novel and the new ship aroused tremendous interest on her advent in 1849.

She proved most successful in service, and the following year a train ferry was built for the Tay crossing. *Leviathan* had one serious accident during her career of 41 years—she crashed into Burntisland pier and foundered. But she was later refloated and replaced in service.—*From " The Scotsman."*

* * *

If All Cheat for a Penny

A Laindon (Essex) woman admitted at the Mansion House recently that she had tried to cheat London Transport of 1d. on a 2½d. Tube fare. She was fined 10s.

If every one of the 6,000,000 people who ride daily on the Tubes cheated London Transport of a penny, £25,000 would be lost each day, said a solicitor.—*From the " Evening Standard."*

* * *

Mail Steamer " Nijmegen "

The Railway Executive is considering naming a new mail steamer for the Harwich-Hook of Holland service *Nijmegen*, in commemoration of a battle in the liberation of Holland. The ship, a 5,000-ton passenger and cargo vessel, is similar to the British Railways' mail steamer, *Arnhem*, scene of the airborne battle. *Nijmegen*, built to replace the steamer *Amsterdam*, lost in the Normandy invasion, will be launched early next year. Because of the popularity of the old *Amsterdam* on the Harwich-Hook run, that name has been put forward as an alternative for the new ship, but *Nijmegen* is first favourite.—*From " The Daily Telegraph."*

* * *

Scottish Region Stations Competition

Awards have been made to 296 stations in the Scottish Region best-kept stations competition for 1949. In the special-class prize list, awards went to Advie, Morayshire; Crianlarich Lower; Harburn, Kildonan, Sutherland; Lochee; Port Glasgow; and Stewarton stations. First-class prizes have been won by 49 stations; there are 75 winners of second-class prizes; and 165 have gained third-class awards.

* * *

" A plague on these new double-deckers . . . !"

[Reproduced by permission of the proprietors of " Punch "

Glamour Girl

(A 28-year-old Pullman car has been modernised for the " Golden Arrow " service—see our November 4 issue).

Now this is the tale of a Pullman car,
A chic little lady named *Malaga*,
Sedate, serene, in her walnut sheen.
It's hard to imagine she once had been
Unloved, rejected, despised, and sere—
What is her secret elixir?

Her gown is panelled in smooth veneer,
Her eyes are mirrors, pellucid, clear,
" Tinted in peach and framed to tone,"
" With a hint of mystery all their own ";
Untroubled by Nye's quaint aphorisms,
She sees quite well through her plastic prisms,
And, as for her anodised, hand-carved plaques
And all the other absorbing facts—
Well, they make a change from income tax!

So, if you'd thrill to the very marrow,
Go gay with her on the " Golden Arrow,"
Even though it cost you a tiny twinge
To start on a Continental binge
In a Pullman car with a petal fringe.

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Rolling Stock Additions

In August last, 956 new goods wagons were added to railway stock, bringing the total of new wagons placed in service this year to 4,472. Local firms produced 162 units, 84 were built in railway workshops, and 710 were imported. During the first eight months of this year, 208 bogie wagons and 642 four-wheel wagons were scrapped. Six of the class S-1 shunting locomotives, which are being built by the administration at Salt River, are now in service. A further six are being constructed. In August, heavy repairs to 71 locomotives were completed, the highest output since March, 1943. The returns for July were 66 heavy and 21 light repairs.

Mineral Traffic

The figures for coal production and export continue to show increases over last year. In the four weeks ended August 27, 1,689,115 tons were produced, of which 210,870 tons were shipped. Corresponding figures for last year were 1,570,733 and 137,899 tons respectively. Earnings from coal traffic for the week ended September 3 amounted to £181,243.

Manganese ore hauled in the first five months of the 1948-49 financial year amounted to 142,172 tons. In the current financial year, the loadings improved by nearly 150 per cent., with a figure of 346,333 tons. Manganese for export during August reached a new high level of 85,000 tons, and all classes of goods traffic showed satisfactory tonnages. Chrome ore loadings in the five months advanced from 140,792 tons to 200,017 tons or 42 per cent.

Wagon loadings on the S.A.R. averaged 16,407 a day in the first five months of the current financial year, as against 15,408 a day for the same period of last year.

RHODESIA

Beira Port

During the past eight months, tonnages dealt with at the Port of Beira have shown a distinct improvement, landed cargo averaging 81,000 tons a month, and cargo shipped 70,000 tons.

Water Shortage

A major problem at the moment is water shortage, especially at Magoye and Monze in Northern Rhodesia, and to augment the supply it has been necessary to introduce a water-tank service on various trains to empty up to 39 tank cars a day into storage sumps at both places. The operating difficulties have reacted on the train service and involved long turns of duty under trying climatic conditions.

Road Motor Services

Lorry-miles for August were 169,673, a record, and trailer-miles 79,058, also a record. The tonnage carried was 23,081 plus 1,647 gal. of cream and 491 head of cattle. Seasonal traffic reached its peak.

Working Results

Receipts for the five months ended August 31 (including the Beira and Shabani railways) totalled £4,831,821, an increase of £641,550 compared with the corresponding period of 1948. Expenses amounted to £3,420,674, or £349,159 more than in 1948, leaving a net operating revenue of £1,411,147, or £292,391 more than last year. Revenue records attained during August included general goods £503,107 and coaching £115,501. Total tonnage hauled in August was 481,654, including 225,977 general goods, while passengers carried reached the record figure of 223,744.

NIGERIA

Traffic and Revenue

During October, 42,317 tons of groundnuts were conveyed by rail to the coast for shipment, this being the highest tonnage hauled in any one month for several years. Since April 1 last, 216,302 tons have been hauled from Kano.

Revenue for the 31 weeks ending November 5, amounted to £3,470,153, an increase of £210,704 over the corresponding period of last year. But for labour troubles, which included two short stoppages and go-slow movement, revenue would have been even greater.

New Timetable

A new timetable was introduced on October 10. The principal features of public interest were additional passenger train services involving over 5,000 additional passenger (or mixed) train-miles a week.

New Rolling Stock

Locomotives and rolling stock ordered in 1946 are now arriving, and during the seven months April-October 43 locomotives and 32 boilers, 404 covered wagons, 94 coal hopper wagons, and three third class coaches have been delivered.

Radio-Telephone Service

A railway radio-telephone service is now in operation between the three district headquarters of Ebute Metta (Lagos), Zaria, and Enugu, which, in addition to allowing senior operating officers direct conversation, also reduces the overburdening of the railway telegraph circuit.

IRAQ

Freight Traffic Tonnages

Heavy traffic is being handled by the State Railways, particularly in barley and wheat (after a bumper harvest) from all parts of the system to the port of Basra for export. Weekly grain tonnages arriving at Maqil (the port area) averaged 4,000 tons in June, 5,000 tons in July and August, and 8,000 tons in September, rising to nearly 12,000 tons in the last week of October.

Seasonal dates from the middle Euphrates districts are amounting to over 2,000 tons weekly and general merchandise to 4,000 tons. In the up direction from Basra a weekly average of 11,000 tons of general imported goods and oil companies' stores, machinery, and equipment has been forwarded. Sand and shingle from the 30-mile Jebel Senam branch, for barging from Maqil to Abadan, account for several thousand tons a week.

The new 70-mile metre-gauge extension from Kirkuk to Erbil, Southern Kurdistan, has tapped a rich grain-producing area, and gives a through metre-gauge haul of over 600 miles to Basra. Grain for shipment from the Mosul area, on the standard gauge line to Syria and Turkey, is transhipped to the metre-gauge section in Baghdad. At the same time, a cross-flow of grain is passing at the rate of 2,000 tons a week from Central Iraq to Erbil, for onward conveyance more than 350 miles by lorry through the mountains to Tabriz in Iranian Azerbaijan.

With the opening of a cement factory on the outskirts of Baghdad, a special 650-ton limestone train is running nightly from the quarries at Sulaiman Beg, 140 miles away on the Kirkuk line. Three 650-ton oil-tank trains are booked nightly from the Khanaqin City branch to Baghdad (110 miles) for the Rafidain Oil Company.

Passenger Traffic

Passenger traffic is steady, and large numbers of Moslem pilgrims to the Holy City of Kerbala (330 miles) arrive at Basra each week by the British India mail steamers from Bombay and Karachi. The air-conditioned coaches between Basra and Baghdad (353 miles) are well patronised, and the new air-conditioned service between Baghdad and Mosul (250 miles) has been much appreciated. The "Taurus Express" continues to run twice weekly between Baghdad, Mosul and Aleppo, Adana, Ankara, and Istanbul.

Work is progressing on the new terminal station and River Tigris Bridge in Baghdad, as well as on the bridge at Hindiyah, to carry the Kerbala branch across the Euphrates.

UNITED STATES

Improvement Plans of Great Northern

The Great Northern Railway proposes to spend $27,405,000 on improvements next year. Of this sum, $16,862,000 will be spent on new rolling stock, and $10,543,000 on track improvement. Fifty diesel-electric locomotives of various types will be bought at a cost of $10,227,000. For the Western Fruit Express Company, a subsidiary, 500 steel refrigerator vans will be acquired. The track programme includes the laying of approximately 33,000 tons of 115-lb. rail.

ARGENTINA

Heavy Passenger Traffic on Loyalty Day

Thirty-two special trains, carrying some 50,000 passengers, were run by the railways on October 17, "Loyalty Day," in connection with a mass meeting held in Buenos Aires.

Experimental Luminous Distant Signals

The General San Martín Railway is trying out a new type of luminous distant signal which lights up automatically when a train approaches at a distance of 1½ km. It is visible both in daytime and in foggy weather as well as at night, and the use of fog signals is thus obviated. Power is taken from storage batteries, enabling the signal to be used on any part of the line. If the trials prove successful, it will probably be used by all the railways.

IRELAND

Scheme for New C.I.E. Headquarters Abandoned

The Irish Government has announced that the Minister for Social Welfare will purchase the eight-storey building in Store Street, Dublin, built by Coras Iompair Eireann. The building, not yet completed, was to be the administrative headquarters of the company, with its ground floor utilised as a central terminal for long-distance buses.

Answering a question in the Dail on November 17, the Taoiseach, Mr. J. A. Costello, said that C.I.E. had recently indicated that it did not now require these

premises. The Department of Social Welfare was in urgent need of more suitable centralised accommodation—the staff now numbers 1,300 spread over 13 buildings in the city—and the Government had authorised the Minister to purchase the premises for use as central offices. The entire premises would be used by the Department, with the ground-floor section adapted for office use.

SWITZERLAND

Doubling on Locarno Branch

The 5·6-mile section between Giubiasco and Cadenazzo of the 14-mile Bellinzona-Locarno line is to be doubled at a cost of fr. 4,030,000. The project, approved in the middle of November, includes also the enlargement of Giubiasco Station and the erection of electrically-operated signal boxes at Giubiasco and Cadenazzo. Giubiasco, where the Locarno branch leaves from the Gotthard line, is 1·8 mile south of Bellinzona. At Cadenazzo, another line branches off, and runs along the eastern shore of Lake Maggiore to Ranzo-San Abbondio, 8·7 miles farther south (Swiss frontier station), Pino Tronzano (Italian frontier station), thence to Luino, Laveno, and Novara.

With the expanding tourist traffic for Locarno and the increasing goods traffic on the Lake Maggiore line, the Giubiasco-Cadenazzo section, common to both lines, has become considerably overtaxed, with 91 trains worked over the section in the 24 hr. The Lake Maggiore line is steam and the Locarno line electric. The steam trains work through from and to Bellinzona, over the electrified Bellinzona-Giubiasco section of the Gotthard main line. The earthworks and other structures on the Giubiasco-Cadenazzo section were widened for a second track in connection with a land improvement scheme carried out some years ago. Hence, the completion of the project should be speedily undertaken, especially as the line runs through flat country.

DENMARK

Copenhagen Suburban Electrification

On May 15 last the electrification of the suburban line between Copenhagen and Ballerup was completed. The work was begun before the war, but ceased because of lack of materials. The line is 6½ miles long and was formerly single throughout. It has been doubled as far as Herlev, the section from Herlev to Ballerup remaining single-track. The work has also included the building of a number of bridges to eliminate all level crossings.

There are six stations, of which one, Jyllinegevej, is new; the others have been rebuilt with island platforms. At Ballerup there is interchange across an island platform to diesel trains to Frederikssund. Herlev and Ballerup stations have new electric signalling apparatus, and the line is equipped with electric block system throughout. All signals are of the colour-light type.

The current is 1,500 volts d.c., transformed from 10,000 volts a.c. in the original substation at Flintholm and in a new substation at Skovlunde. The line has now 58 trains a day (one every 20 min.) against 16 before electrification, and the travelling time has been reduced from about 43 to 30 min., with one additional stop. The speed averages 22·4 m.p.h.

As the new rolling stock for the line was not ready when the line was opened for electric traction, the electric trains from Holte were prolonged beyond their earlier terminal station at Vanlose to Ballerup. It is the intention, when all the new stock has been delivered, to provide a special service running through central Copenhagen to Hellerup, thereby giving the section from Copenhagen main station to Hellerup three trains every 20 min., as against two. The total cost of the electrification of this line is about kr. 19,000,000.

SWEDEN

Changing Rooms at Stockholm Underground Stations Suggested

A member of the Stockholm City Council has suggested that at the stations on the underground railway now being built, changing rooms should be provided for persons who wish to go to the theatre, and so on, after work. The changing rooms would be equipped with shower baths and lavatories. Provision of such facilities would induce people to stay in town, and would, to some extent, help to ease the peak-hour problem.

Publications Received

Die Plastizitätstheorie im Stahlbetonbau (The Theory of Plastics in Reinforced Concrete Construction). By Franz Gebauer. Vienna: Verlag Georg Fromme & Company, Nikolsdorfergasse 11. 9½ in. × 6½ in. 184 pp. Illustrated. Paper covers. Price U.S.A. $5.40.—This treatise discusses briefly the properties, and the theories based on them, of various steels and of the ingredients of concrete, and then deals more fully with the application to reinforced concrete of the theory of plastics; a section is devoted to bending and torsion. The long bibliography names mostly works in German.

Steamers of the Thames and Medway. By Frank Burtt. London: Richard Tilling, 106, Great Dover Street, S.E.1. 8½ in. × 5½ in. 192 pp. + 46 illustrations. Price 12s. 6d.—This very interesting compilation of the late Mr. Frank Burtt, who died on August 22, 1949, presumably is the last from this author's pen, although we understand that he left notes which may form the basis of future volumes. He is best known for his work on the history of L.B.S.C.R. locomotives, but he wrote a volume in 1934 on "Cross-Channel and Coastal Paddle Steamers," to which the present publication is a companion. More than 90 per cent. of the river craft described are paddle steamers. Operations of steamships on the Thames began in 1814. There have been many owners, and many types of service, and the author follows their ramifications so far as records have survived. Railway ownership is confined to the Thames ferry services. The Great Eastern Railway operated between North and South Woolwich from the late 'forties until October 1, 1908; and, of course, the old London, Tilbury & Southend Railway ferry between Tilbury and Gravesend still survives under British Railways. This volume is an essential reference work to all interested in the river steamers of the London Area, and they have reason to be grateful to Mr. W. G. Tilling for his enthusiasm both as "literary executor" and also as publisher.

Torque.—The current issue of *Torque*, the second of the newly founded quarterly development journal of Silentbloc Limited and the Andre Rubber Co. Ltd., contains a general survey of vibration, and articles on applications of Silentbloc products to machinery and mechanism of different kinds, including the Marconi Electro-Encephalograph, or brain tester, which is protected from vibration by Silentbloc mountings. The journal is well produced, with some good photographic illustrations.

Hot-Tinning. By W. E. Hoare, B.Sc. (Eng.). Greenford, Middlesex: The Tin Research Institute, Fraser Road. 112 pp. Illustrated.—This booklet provides working instructions for the production of hot-tinned coatings on fabricated articles and components. It is compiled primarily for operative tinners, foremen and design engineers. Attention is devoted to plant requirements and plant layout provided. Procedures for cleaning, pickling, and fluxing ferrous and non-ferrous metals in preparation for the actual hot-dipping operation are fully dealt with, and the dip-tinning operation in its various forms is described in detail. The sections dealing with the actual dipping processes describe techniques for the coating of steel, cast iron, copper and other metals in both pure tin and in tin-lead alloys, also certain new techniques developed at the Tin Research Institute laboratories for the tinning of steel and cast iron. Methods of minimising the contamination of tinning baths, for the cleaning and maintenance of the baths and for the disposal of residues are described; there is a chapter on the examination and testing of hot-dip tinned coatings and an appendix of useful data and conversion factors.

Physical Properties of Tufnol.—The firm of Tufnol Limited, Perry Barr, Birmingham, has published a well-bound loose-leaf catalogue giving the physical properties of Tufnol and its uses. The catalogue, which consists entirely of technical data and illustrations showing the testing and specifications complied with by Tufnol sheets, rods, and tubes of various brands, should be of considerable assistance to design engineers.

Thos. W. Ward Products.—Thos. W. Ward Limited has issued brochures describing some of its products. These include a steel fixed-boom conveyor with pneumatic tyres; a portable, diesel-driven air compressor; and portable, petrol-driven self-priming centrifugal pumping sets. A wide variety of handling gear is described, ranging from Tangye hydraulic jacks to chain blocks of various types and gravity roller conveyors, and an announcement is made of the firm's hire fleet of cranes, bulldozers, pumps, lifting tackle, etc., said to be one of the largest and most modern in the country.

Railway Fastenings and Transmission Line Equipment.—A catalogue has recently been published by Bayliss, Jones & Bayliss Limited, 139, Cannon Street, London, E.C.4, containing 159 pages of description and illustrations—some in the form of dimensional sketches—of the firm's products. The catalogue is arranged in three sections, the first dealing with various types of railway fastenings, miscellaneous forgings, and bar work. The second section deals with electrical overhead transmission line and telegraph equipment. The latter section contains examples of some of the machines which the firm makes.

Power Supply for Liverpool - Southport Electric Lines, L.M.R

Opening of Hall Road control room marks the completion of a scheme initiated by the former L.M.S.R.

WITH the completion of the new control room at Hall Road, Liverpool, the £500,000 modernisation scheme of the Liverpool-Southport electric lines initiated by the former London Midland & Scottish Railway has now come into full operation. Work on this scheme commenced in 1945, and a number of novel features has been introduced, including the type of substation building employed—which is pre-fabricated—the design of the rectifier equipment, the busbar clamping feature of the d.c. breakers, and the method of running the control wiring in the substations; also, the make-up of the pilot cable and the design of the control desk are novel.

The former Formby power house and substation plant which generated non-standard 25-cycle current was obsolete and inefficient, and rebuilding for standard frequency was not economical owing to bad load factor and absence of standby. With the modernisation of the substation plant and buildings, which were arranged for remote control, there has resulted a saving of staff, while obtaining better voltage on track and improved automatic isolation of faulty trains or sections of track.

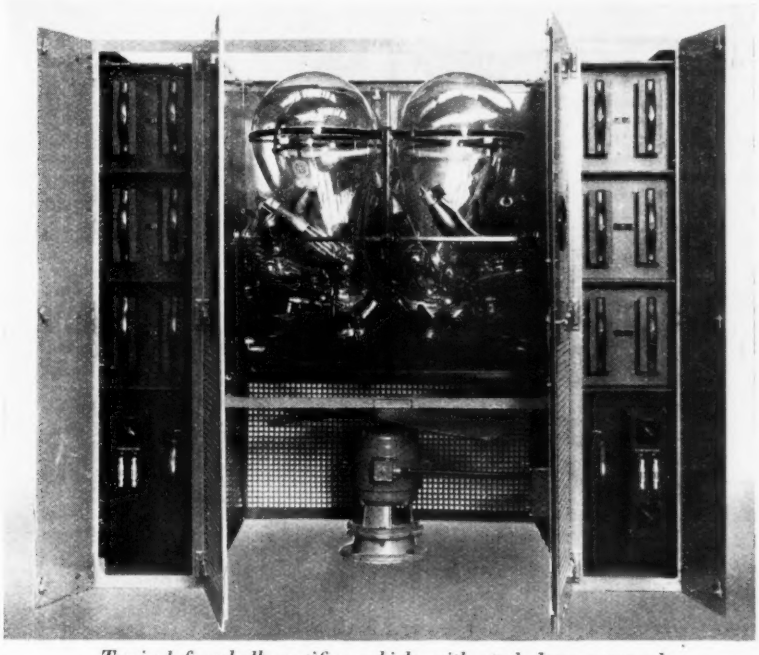
The electrification of the suburban line between Liverpool and Southport was decided on in 1903 by the former Lancashire & Yorkshire Railway as the best means of providing an accelerated service for the popular residential district through which the line passes. The electric service between Liverpool and Southport was opened for traffic in March, 1904, with later extensions to Aintree and Ormskirk and the line connecting Aintree and Seaforth.

Originally, the electricity for these lines was generated at 7.5 kV. 25 cycles three-phase at the railway power station at Formby, and distributed to substations for conversion by means of rotary convertors to 630 V. d.c. After some 20 years of service the original plant in the power station was replaced by more up-to-date and efficient plant, and at the same time additional converting plant was installed in two of the larger substations. This was followed about ten years later (with the object of meeting increased traffic demand) by the erection of two new substations and the introduction of mercury arc rectifiers in two unattended substations.

This was the first time glass bulb rectifiers had been used for supplying current for an electrified line, and the use of steel tank rectifiers for this purpose in this country was barely a year old. These two rectifiers are still in use, and, as noted later, their transformers have been rewound and the equipment re-modelled as part of the present scheme.

The end of the recent war found the power station plant nearing the end of its useful life, and it was obviously undesirable to maintain the non-standard 25-cycle power distribution system. It was decided to close the power station and to purchase current in bulk. The necessary arrangements were made for a duplicate power supply, with the then Liverpool Corporation Electricity Department, and power is now supplied at Bank Hall by the Merseyside & North Wales Electricity Board at 33 kV. through two separate feeders, originating from different sections of the busbars at Clarence Dock power station, one of them passing through the Beaumaris Street substation.

The two feeders are interconnected as shown on the diagram on page 644. Each feeder is brought into a separate switch house at Bank Hall. These switch-houses were built by British Railways to house equipment belonging to the Electricity Board, and they are symmetrically placed at opposite ends of the main supply point at Bank Hall, as shown below. Each switch-house contains 33 kV. oil circuit breakers at 500 mVA. rupturing capacity, one acting as an incoming feeder switch, one controlling the supply to a 33/11 kV. 15 mVA. transformer purchased and installed by the railway, and a third controlling the interconnector mentioned above.



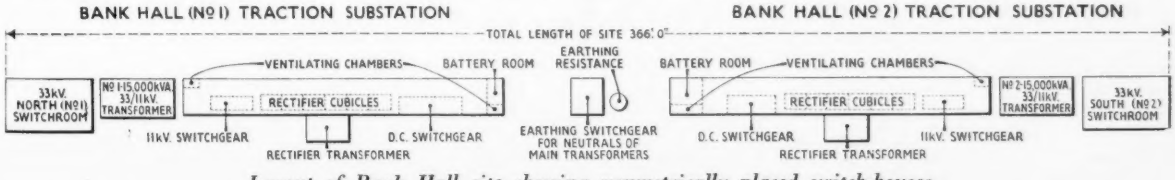
Typical four-bulb rectifier cubicle with steel doors removed

Choice of Voltage

The main 15 mVA. transformers are also located symmetrically, one at each end of the site, and deliver 11 kV. current to two railway substations from which the 11 kV. distribution system originates. The choice of this voltage for distribution was dictated by economic considerations, particularly the fact that it was found possible to make use of a considerable section of the original 7·5 kV. overhead transmission line simply by stepping up the operating voltage to 11 kV.

Reference to the diagram on page 644 will show that the 14 traction substations are now fed by two ring mains, one supplying the substations on the line between Liverpool and Southport, and the other, those on the line between Liverpool and Ormskirk, short spurs from the ring mains feeding the substations at Liverpool Exchange and Aughton Park. The substations are connected alternately to each leg of the ring main, so that in the event of a cable fault it is unlikely that adjacent substations will be affected.

The new 11 kV. feeders are paper insulated three-core cables with conductors sheathed with lead alloy "B." The sheath is protected by a double layer of bitumen papers followed by a bedding of hessian tape and single wire armouring. A special corrosion proof serving consisting of a thick layer of bitumen pro-



Layout of Bank Hall site showing symmetrically placed switch-houses

tected by one layer of 3-ply jute serving overall, forms the outer cover of the cable. For a large portion of the route, the cable has been buried alongside the line. In all, 35 miles of new cable have been installed, and these, which, together with the 16 miles of existing cable and overhead line, form the new 11 kV. ring main network described.

The 11 kV. switchgear installed in the traction substations is of standard oil-immersed, double-break, withdrawable truck type, with compound-filled busbars; 150 mVA. rupturing capacity units are provided in all substations except the two at Bank Hall, where 350 mVA. gear is installed. The typical substation houses only two 11 kV. breakers, one controlling the rectifier equipment and the other the "outgoing" feeder from the substation.

The "incoming" feeder is connected solidly on to the switchgear busbars. This arrangement is modified at the two substations at the ends of the cable rings remote from Bank Hall. At Maghull, for instance, a sectionalising breaker has been inserted in the busbars to ensure that, in the event of a cable fault occurring, one at least of the adjacent substations at Maghull and Aughton Park can still function. Similarly, at Southport, both "incoming" feeders are controlled to ensure continuity of the supply to the rectifier in this substation should either feeder fail. The terminal substations at Liverpool and Aughton Park are provided with rectifier breakers only.

Protection against Faults

Protection of the 11 kV. system against faults is obtained by the use of relays operating on a modern balanced-voltage principle, the load carried by the "outgoing" feeder at any substation being balanced against the load carried by the corresponding feeder at the next substation on the same leg of the ring main summated with the load taken by the rectifier at that substation. Back-up overload and earth leakage relays are also provided on the feeder switches at Bank Hall and at Southport and Maghull.

Single-unit glass bulb rectifier equipments have been installed in each of the 14 traction substations for conversion of the 11 kV. supply to the 630 V. d.c. track supply. In all but one substation, these are of the latest design, and are made up of cubicle units each comprising four three-anode bulbs. Three standard sizes of equipment are in use, 1,260 kW. (3-cubicle type), 1,680 kW. (4-cubicle type) and 2,520 kW. (6-cubicle type), depending on loading conditions. These ratings are continuous and the largest equipment can handle overloads up to 18,000 amp. for one second. The four bulbs in each cubicle are mounted in a withdrawable carriage and cooled by a single variable speed fan in the base of the cubicle.

As has already been mentioned, the remaining rectifier equipment has been made up from the two rectifiers installed in 1932, these having been modified to suit the new supply voltage and frequency. It comprises 16 six-anode bulbs arranged to give an output of 2,000 kW. at 630 V. d.c.

The rectifier transformers, which are mounted outside the substation buildings, are wound for 12-phase operation of the rectifiers, auxiliary windings giving supply at 110 V. to the rectifier fans and excitation circuits. The connection from the rectifier cathodes is taken through a high-speed circuit breaker on to the substation positive busbar. This breaker is rated at 4,000 amp. and is fitted with a reverse-current trip. A load beyond the capacity of the rectifier equipment operates a relay on the E.H.T. side which is arranged to open the d.c. rectifier breaker.

The track, which is suitably sectionalised for isolation purposes, is fed through high-speed circuit breakers of 2,500 or 1,500 amp. rating. These are arranged to operate on overload, and are fitted with relays which will reclose the breaker a pre-determined number of times after such an operation, finally locking out the breaker if the overload persists.

All the d.c. breakers are mounted on withdrawable trucks, connection being made by clamps operated from the front of the truck to fixed contacts mounted on a floor-fixing frame. The cabled connection to the track is taken through a hand-operated isolating switch mounted outside the substation, thus enabling the positive bar to be isolated from the live track for cleaning, and so on. The negative track feed is taken through a similar switch direct from the rectifier transformer neutral.

A 415 V. 3-phase supply is available in each substation for auxiliary purposes. In most cases, this is obtained from a combined 11 kV. switch fuse and transformer unit mounted outside the substation and connected in the "outgoing" cable. The auxiliary supply can thus be maintained at a particular substation even though the 11 kV. bars are "dead" for maintenance or other reasons.

Ten new substation buildings were required to afford suitable spacing of the rectifier equipments. These are of a novel character, being constructed of pre-fabricated, reinforced concrete panels, each 3 ft. wide, bolted together. The number of panels employed depends on the amount of plant installed, the total length varying from 80 ft. to 120 ft.

The buildings are about 11 ft. 6 in. wide by 10 ft. high and the whole of the interior has been sprayed with asbestos to give heat-insulating qualities. Holes have

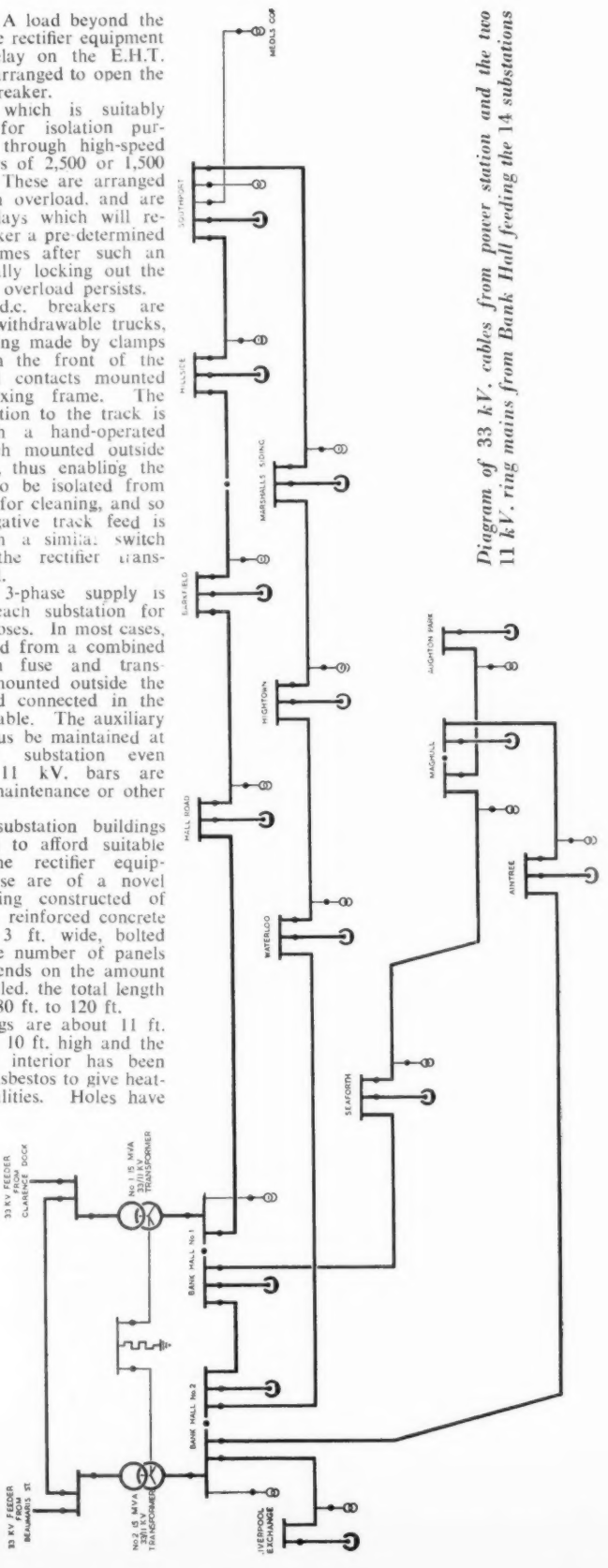


Diagram of 33 kV. cables from power station and the two 11 kV. ring mains from Bank Hall feeding the 14 substations

been provided in the panels along one side of the buildings, to allow the various cables to enter and leave, this arrangement avoiding the necessity for any ducting or trenching in the floor. All the switchgear has been provided with cable boxes suitable for this horizontal entry of cables.

Suspended from the concrete roof members, a small covered steel trough runs the length of the building. This serves to carry the various control and operating wires between the different items of switchgear, and so on, the appropriate wires being led down to individual switches from the trough through flexible conduits. All the wires are taken to one end of the building where the trough terminates in a spacious disconnecting link box which permits easy testing of the various circuits. All the small wiring is of flame-retarding construction to minimise the possibility of fire arising from an electrical fault.

At one end of the building, the last two panel sections are partitioned off from the rest of the building by a brick wall, the small room thus formed housing the 100 V. switch operating battery and the 50 V. battery for operating the control equipment. The batteries are trickle-charged from the substation auxiliary supply.

Lighting of the substations is by means of fluorescent tubes, and thermostatically controlled electric heaters are provided. If the substation temperature becomes excessive, two ventilating fans, one at each end of the building, are brought into action, the air being drawn in through filters and discharged through ventilators in the substation roof.

The substations are unmanned, and are remotely controlled on the common diagram system from a new control room building at Hall Road, which lies approximately half-way between Liverpool and Southport. This new building is of single-storey brick construction and the central portion forms the control room itself. Around the control room are grouped smaller rooms housing control apparatus, batteries, heating, and ventilating plant ,and so on, as well as offices for supervisory staff and messroom and lavatory for the control room operators.

The main feature of the control room itself is the control desk which contains duplicate master control panels from which the operator and his assistant can control the circuit breakers in any of the substations, and receive indications of any system change which may have occurred. There is also a mimic diagram depicting the E.H.T. and track-feed systems, on which the conditions of the breakers are indicated by multi-coloured lights, which can be changed by the operators when necessary from switches on a setting-up panel. At each end of the control desk is a writing position for the operators. This is fitted up with telephones and telephone switchboard from which direct lines communicate with all substations, passenger stations, signal boxes, and other strategic points on the electrified system.

Control of Substations

Control of the substations is obtained over four pairs of pilot lines, two of which cover substations south of the control room, and two covering substations north of the control room. Adjacent substations are connected to alternate pilot pairs, so that in the event of trouble on one pair, control is not lost of a block of adjoining stations; furthermore, duplicate pairs are run to each substation and the operator can change over from one pair to the standby at will. As an additional precaution, the control equipment in the control room building is housed in two separate rooms on opposite sides of the building, each containing the apparatus associated with one northbound and one south-bound pilot system, so that should one room be lost altogether for any reason, it would still be possible to control alternate substations throughout the system.

In addition to the four main control systems mentioned above, two subsidiary systems are also brought to the desk, one giving control and indication of certain circuit breakers in the 33 kV. system at Bank Hall, and the other providing information concerning important auxiliary equipment installed at Southport.

The various relays and selectors, etc., comprising the control equipment are housed both at the control room and in the substations in special dust-tight steel cubicles with shock-proof mountings. Each bank of equipment is arranged on a jack-in principle for easy replacement. A special testing unit is also provided in one of the apparatus rooms at the control room building by means of which control station-substation operation (both ways) can be simulated and faulty or repaired apparatus quickly checked for correct operation.

The upper portion of each wall of the control room has been constructed of glass bricks allowing ample natural light to enter the room for operational purposes during daylight hours. Indirect fluorescent lighting is also installed. Fully automatic heating and air conditioning is provided throughout the building, the equipment including gas-fired boiler, circulating pumps, fans, air filter, and heater. The whole apparatus is controlled thermostatically and by means of a compensator unit catering for changes in external weather conditions.

In view of the important functions exercised by the control room, duplicate L.T.a.c. supplies have been brought in to feed the auxiliaries. Duplicate 50 V. batteries have also been installed for operation of the remote control equipment. All wiring in the building, apart from the multicore cables between the control apparatus and the desk, has been carried out in copper-sheathed, mineral-insulated cable.

The pilot cables installed are of an entirely new design specially prepared to permit the differing duties required to be carried out by one cable. These include the remote control of the substations, pilot wires for use in connection with the E.H.T. protective relay system described above, telephone communication, transmission of metering impulses between the main supply point at Bank Hall and the control room, and lines for passing impulses from a master clock installed in the control room to a repeater installed in each substation.

Approximately 27 miles of pilot cable have been run, for the most part buried in close proximity with the main 11 kV. feeder cables. It is of the multiple twin dry-core screened type, made up with either 24, 16, or 8 pairs of paper insulated conductors, depending on the section involved. Two pairs of such conductors are twisted together and screened with copper tapes, the whole cable form being lead alloy sheathed, bituminised paper lapped, hessian taped, steel-tape armoured, corrosion proofed, and, finally, hessian taped overall.

The pilot cable is sectionalised at each substation, and is terminated at a special link box, so enabling any section to be easily isolated, and tested out if necessary. At various points along the track, such as at passenger stations where the cable has to be broken into to provide a telephone connection, a tee-joint is made in the cable and a small 2-pair pilot cable of similar construction to the main cable is led off to the required telephone position.

Rectifiers were provided by the Hackbridge & Hewittic Electrical Co. Ltd.; H.T. switchgear by Switchgear & Cowans Limited; d.c. circuit breakers by Bertram Thomas Limited; cables by British Insulated Callender's Cables Limited; L.T. d.c. switchgear by The English Electric Co. Ltd.; batteries by the Tudor Accumulator Co. Ltd.; and telephone equipment by Standard Telephones & Cables Limited.

Further illustrations of the Hall Road control room are given on page 651.

SIR WILLIAM CHAMBERLAIN SCHOLARSHIP AND GRANTS.—The council of the Institute of Transport invites from persons engaged in or intending to be engaged in road transport within the North Western Region (defined as the counties of Lancashire, Cheshire, Cumberland and Westmorland), without restriction of age, nationality, or sex, applications for the award in August, 1950, of (i) one Sir William Chamberlain Memorial Scholarship of value not exceeding £50, and (ii) up to seven Sir William Chamberlain Memorial Grants not exceeding £10 each. Applications must be made on a form to be obtained from the Secretary, Institute of Transport, 80, Portland Place, London, W.1, with whom the completed form must be deposited not later than May 31, 1950. Each application must be supported by his employer or other responsible person having personal knowledge of him, and by a Member of the Institute.

SCAMMELL LORRIES: ANNUAL STAFF BALL.—There was a large attendance at the annual staff ball held by Scammell Lorries Limited at the Town Hall, Watford, on November 25, more than 400 guests attending this year. Among those present were Mr. E. R. Cartwright, Chairman, Scammell Lorries Limited, and Mr. W. E. Pearson, Managing Director. There was an excellent cabaret show and dancing continued until the early hours of Saturday morning. Local charities will benefit.

CAB-HEATERS AND WINDSCREEN-DEMISTERS FOR LONDON BUSES.—London Transport is planning a large-scale experiment in the use of cab-heaters and windscreen-demisters on buses. A total of 250 of the latest-type vehicles from central and country areas will be equipped. The heaters will be on the same principle as those found in some modern cars. Water, heated by the engine, will pass through a small radiator in the driving cab. Air will be drawn into the radiator, heated, and re-distributed by means of a fan. A jet of hot air will be directed by a nozzle on to the windscreen and so prevent misting-up in cold weather. It is hoped that the experimental heaters will be in use by the end of the year.

South African Railways "3E" Class Electric Locomotives—3*

Electro-pneumatic control equipment with contactors of uniform design operates on a 110-volt L.T. system supplied from two motor-generators

IN planning the control system for these locomotives special emphasis has been given to smooth and easy handling of passenger and freight trains under all variations of weight and gradient. Apparatus necessary to protect the traction motors against overload and no-volts conditions is incorporated in the equipment. To reduce to a minimum the time taken for routine inspection and maintenance the equipment has been laid out so that there is easy access to all parts. Practical experience has shown that such arrangements promote careful work.

Accidental contact with the 3,000-V. gear is guarded against by mechanical interlocking of the doors of the high-tension compartments, and by earthing all points which might become live before any of the H.T. compartments can be entered. In the event of a defective traction motor, provision is made for isolating the motor group concerned, and the locomotive can then proceed with reduced load under the power of the remaining motors. Multiple-unit facilities enable locomotives to be coupled together mechanically and electrically and to be driven by one crew from the leading driver's cab.

The electro-pneumatic unit switch system of control is employed in consequence of its reliability coupled with the low maintenance costs and good accessibility. Unit switches are used as line, resistance, and motor combination contactors, and since all are alike, and are independent, self-contained units, the number of spare parts stocked can be relatively small, while a defective unit can be replaced quickly without disturbing its neighbours. As the unit switches are closed by compressed air and opened by powerful return springs, a very high contact pressure and high speed of opening are achieved.

Wide Speed Range

Maximum flexibility of speed control has been obtained by arranging the power circuits for three traction motor combinations. These are series, series-parallel and parallel, giving one third, two thirds, and full running speeds.

In order to obtain further intermediate and higher running speeds, three additional notches are obtained in each motor combination by weakening the fields, a portion of the motor field current being diverted through inductive shunts. This gives a total of twelve economical running speeds and provides the range of speed control desirable for different train weights, gradients, and speed restrictions.

A large number of resistance notches is provided to maintain the accelerating current within close limits (Fig. 1), and to ensure smooth acceleration on each motor combination. The shunt method of transition is used, a portion of the main resistance being reinserted and half the motors short-circuited before being re-connected to the line; a proportion of the tractive effort is maintained by the remaining motors during the transition period. As unit switches are used for changing the motor combinations transition is very rapid and the partial loss of tractive effort is of extremely short duration. Two electro-pneumatic reversers are employed to change over the connections to the main fields of the traction motors for reverse running.

The traction motors are protected by overload relays, a tripping element being connected in the main circuit and one in each motor circuit, the latter giving individual protection to each motor. A no-voltage relay is also provided to protect the motors against loss and sudden re-application of line voltage. As the overload and no-voltage relays cannot be reset until the accelerating lever of the master controller has been returned to its "off" position, the traction motors cannot be reconnected to the line unless the main resistance has been re-inserted.

Overload Protection

The maximum circuit-breaking capacity has been obtained by using the line switches together with some of the resistance switches to interrupt overload currents. On the incidence of an overload, R3 to R10 resistance switches (Fig. 2) open first, causing a reduction in current; this being followed immediately by the opening of all the line switches, which finally rupture the circuit. As the interruption of heavy overload currents is spread over a large number of unit switches, this equipment possesses very great rupturing capacity.

In order to increase the rupturing capacity of the line switches, which have to deal with the final rupture of the arc, they are provided with double-cell arc chutes

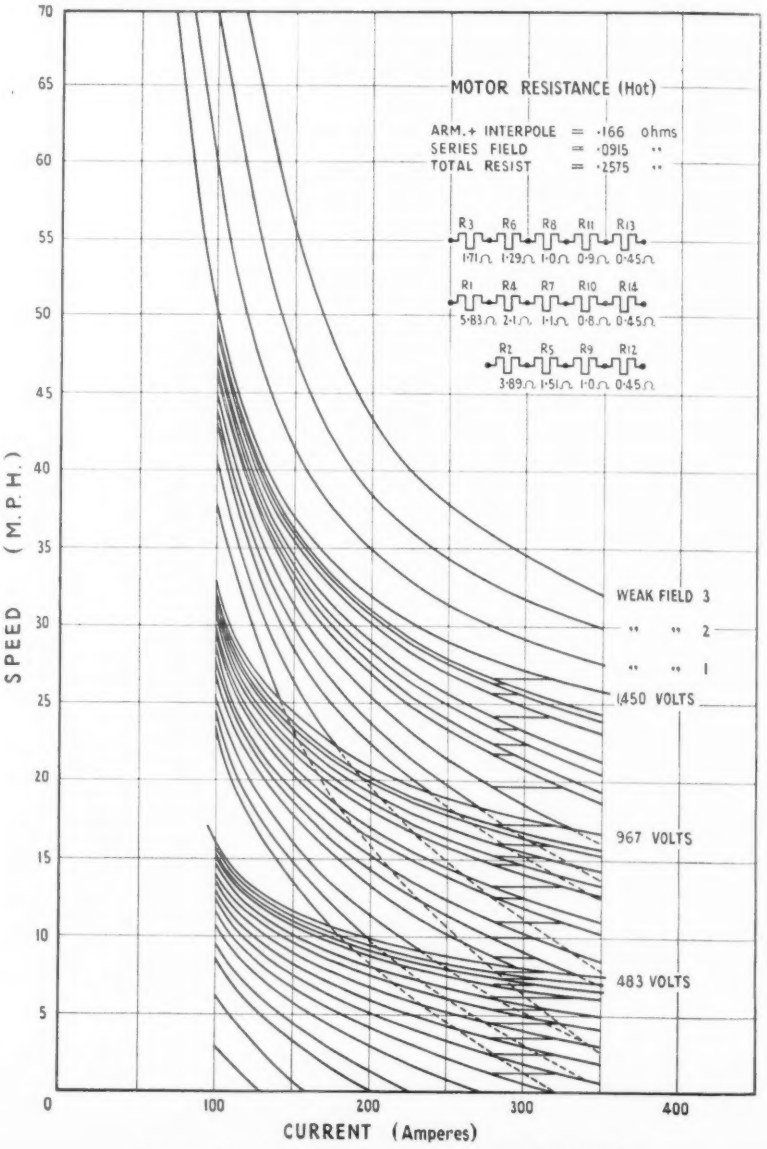
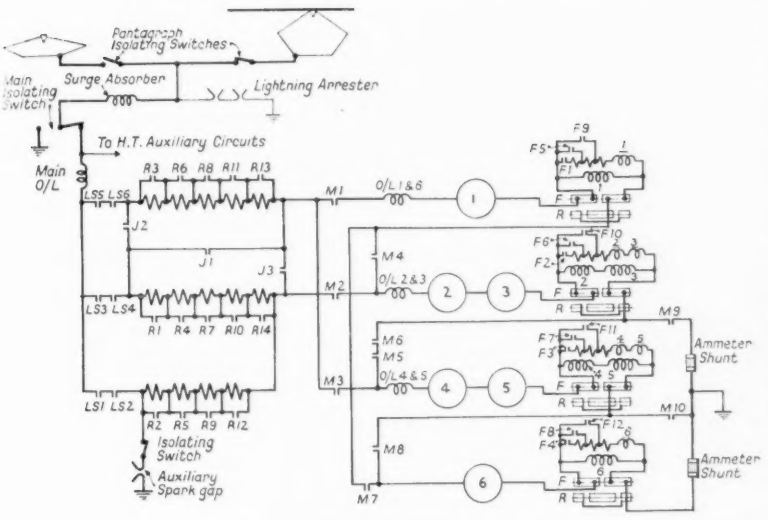


Fig. 1—Notching curves of one motor at 1,450 volts

* Previous instalments of this article appeared in our October 7 and November 4 issues



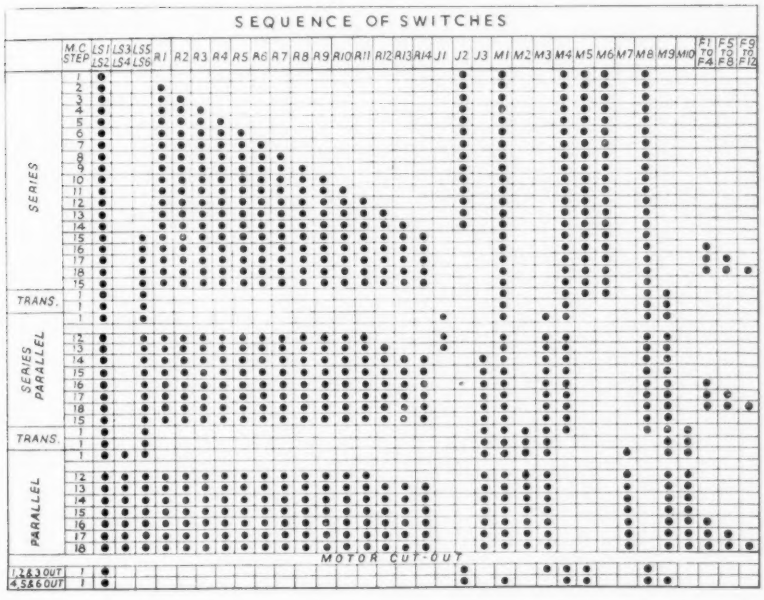


Fig. 2—Power circuits and contactor sequence

of special construction. The cost and delay of fuse replacement for the H.T. motors of the motor-generator sets (Fig. 3) are avoided by providing them with overload relays working in conjunction with high-capacity contactors in place of the customary fuse protection. Each motor is equipped with a permanent resistance of 18 ohms which serves to limit fault currents to a value well within the capacity of the contactor.

The main H.T. equipment is arranged in compartments in the body of the locomotive. In order to protect the control gear against dirt and excessive heat, the resistances are housed in a separate ventilated compartment, while the control gear is contained in two separate enclosed H.T. compartments.

The resistance compartment, which is placed between the two control gear compartments, houses the main accelerating resistances, the field-weakening resistances, which regulate the current in the inductive shunts, and the motor-generator resistances. All these resistances are mounted in two removable frames which can be lifted bodily out of the locomotive, after removing the portion of the roof above the resistance compartment, this arrangement greatly facilitating the reconditioning of resistances during general overhaul.

The resistance compartment is entered through a sliding door, facing which is a passage-way between the two resistance banks, so that there is ready access to all resistances and their connections. As the energy destroyed during the starting periods is converted into heat in the main accelerating resistances, and has to be carried away by the natural flow of air through the compartment, openings are provided in the floor of the compartment and in the roof section to allow free air circulation.

The control gear is mounted in three removable frames, two frames being located in one H.T. compartment and the third in the other compartment. Here, also, the completely assembled frames are easily removable through the roof, which greatly facilitates general overhaul. Access to all parts of the H.T. control gear and their connections is given both at the front and back of the frames by adequate passage-ways.

Each H.T. compartment has a sliding door facing the main passage-way, and these doors, together with the door of the resistance compartment, are mechanically interlocked so that no compartment can be entered unless the pantographs have been lowered and the line terminal of the main isolating switch has been earthed. This is accomplished by operating a two-step mechanism with the reverse key of the master controller. On the first movement a valve is operated to lower the pantographs, and on the second movement an interlock is released. The main isolating switch can now be thrown to its "earth" position to open the main H.T. circuit and to earth the pantographs. Operation actuates a mechanism which unlocks all compartment doors.

All H.T. and L.T. cabling is of the semi-flexible type and is drawn into heavy-gauge rust-proofed conduit, there being as little exposed cable as possible in order to reduce fire danger to a minimum. In addition to the two pantographs, the roof gear comprises two pantograph isolating switches and lightning protection in the form of a spark gap arrester and a Ferranti surge absorber. All roof connections are of copper rod mounted on large and robust porcelain insulators.

Low-Tension Supply

The L.T. supply from the two motor-generator sets is used for driving the compressor and exhauster and for supplying all the L.T. services, including battery charging. Automatic voltage regulators are employed for maintaining the L.T. voltage constant within close limits, thus increasing the life of lamps and battery.

In the event of failure of one of the motor-generator sets, a portion of the L.T. load can be switched to the other set, to maintain the supply of compressed air for braking and L.T. for control and lighting. As on the H.T. side, L.T. fuses are not employed. Automatic circuit breakers are used for the compressor and exhauster motors, and miniature circuit breakers for the protection of the lighting and control circuits.

The usual reverse current protection for the battery consists of a polarised moving coil relay controlling a contactor in the main battery circuit. The L.T. supply also feeds the lighting busbars and couplers for the electric trailer coaching stock, the circuit being protected by an automatic circuit breaker.

The control circuits are energised at 110 V. and are arranged for the multiple-unit operation of two locomotives, two 21-point couplers being provided at each end of the locomotive of a similar type to those used on the older type of 4-axle machines. The master controllers in the driver's cabs are arranged for easy and simple manipulation, the accelerating lever being provided with a positive notching device to facilitate notching up, especially in the dark. This lever is provided with 18 notches, the last three being for field weakening. A separate motor combination lever has three operating posi-

tions corresponding to the three speed combinations.

The removable reverse lever serves for forward and reverse running and for locking the other two levers in their "off" positions when it is at "off" itself. The various levers are interlocked mutually in the usual manner to guard against faulty manipulation by the driver.

Auxiliary interlocks are provided on some of the unit switches to ensure correct sequence of operation. The reversers also have interlocks to prevent the line switches closing unless the reverser drums have moved to the position corresponding to the setting of the reverse key on the master controller. A motor cut-out switch sets up the circuit changes necessary to isolate a motor group should a traction motor become defective.

Train-Heating Boiler

An electric boiler is provided for heating steam train coaching stock, while for each end on porcelain insulators while the heating elements are interconnected at their ends by Monel Metal connectors as three separate circuits each of 106⅔ kW., each circuit comprising two parallel paths of twenty elements in series.

Access to the inside of the boiler is given by a 17-in. dia. manhole, in the cover of which are mounted two Ross Pop safety valves. A steam pressure regulator in combination with a contactor controls each heating circuit, being responsive to a rise or fall in steam pressure. These regulators are set to operate at slightly different values of steam pressure so that they close and open consecutively according to whether the pressure is rising or falling, and by this means the steam pressure is maintained at a constant value.

The boiler is provided with the usual accessories including blow-off cock, blow-down valve, main steam valve, water level glasses, and pressure gauge. In addition, there is a Mobrey water level regulator junction with contactors, causing all contactors to open when the relay trips.

For the electric heating of electric trailer coaching stock, heater couplers are placed on the roof of the locomotive to correspond, approximately, with the positions they occupy on the electric vehicles. The heater bus circuits are protected by two contactors with overload relay. Suitable interlocking is provided also to ensure that a heater coupler cannot be withdrawn with power on, nor can a heater coupler function as a bus connection between the pantographs of two locomotives.

Current Collection and Control Equipment

The current collectors are single-shoe pantographs having an approximate constant contact pressure of 16 lb. over a working height range of 8 ft. Each collector is supported resiliently on a small auxiliary spring-controlled pantagraph attached to the main pantograph structure,

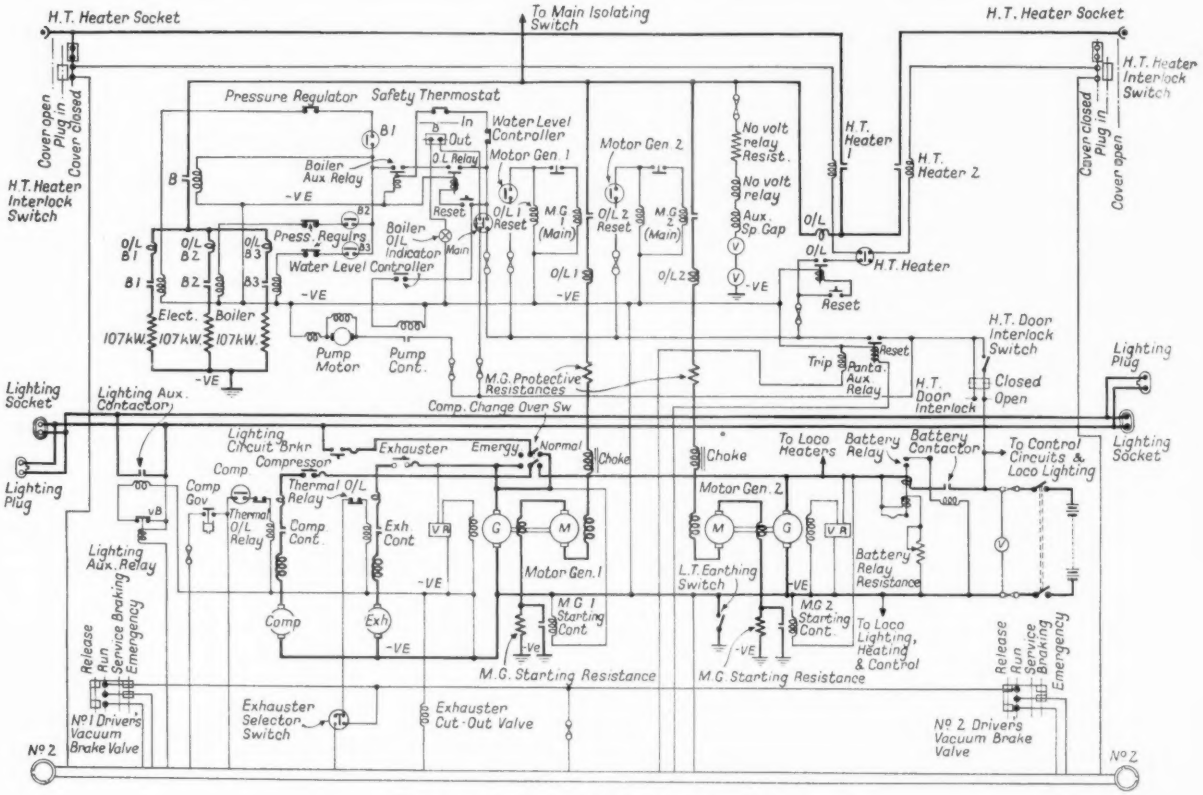


Fig. 3—Auxiliary H.T. and L.T. circuits

electric type trailers heated at 3,000 V. a special heater bus line and couplers are carried on the locomotive. The electric boiler, by Bastian & Allen Limited, is rated at 320 kW. at 2,900 volts, and has an evaporation of 860 lb. of steam per hour at 70 lb per sq. in.

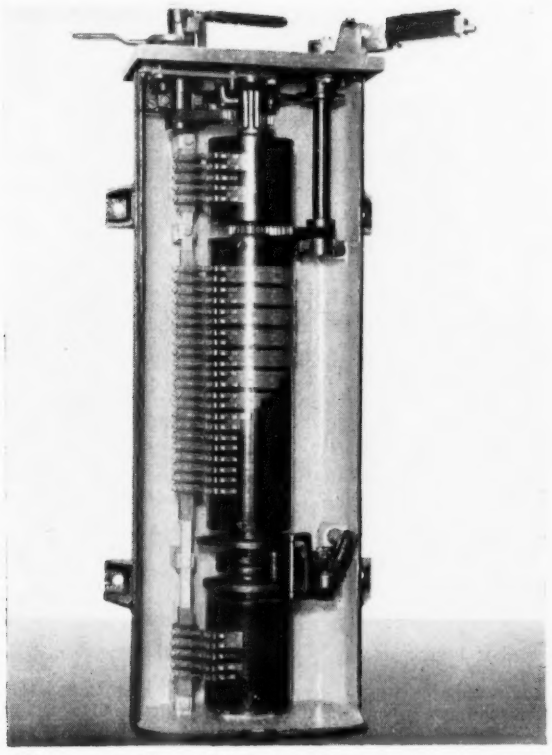
The boiler shell is of mild-steel riveted construction and contains 120 solid drawn steel tubes expanded into the flat end plates and beaded over. Each tube carries a heating element consisting of a nickel chromium resistance spiral enclosed in a quartz tube which insulates the spiral from the boiler.

The quartz tubes are supported at which starts and stops the feedwater pump, and a safety thermostat which switches off all circuits if the water level falls below the topmost boiler tubes. The thermostat is of the latched-out type and must be reset manually after tripping. The reciprocating single-acting feedwater pump, operating at 60 strokes per min., is driven by a ¼ h.p. d.c. motor at 1,440 r.p.m. through a worm type reduction gearbox.

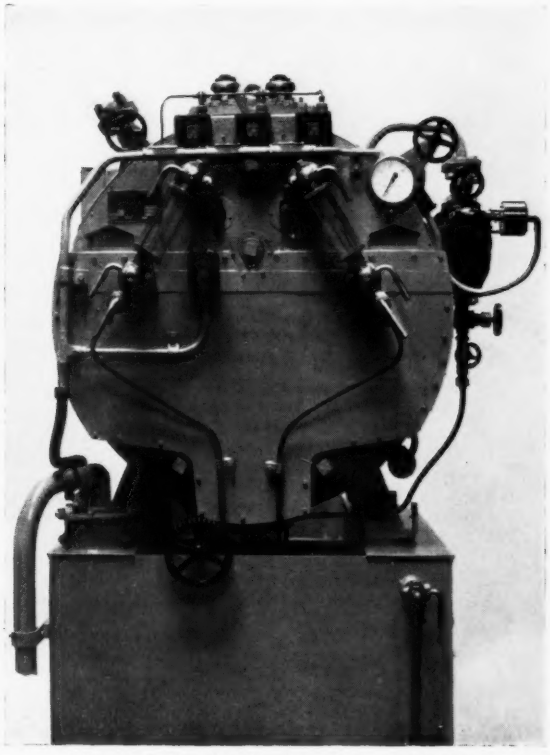
Should a failure occur in one of the boiler heating elements, the section affected may be isolated by opening a control switch in the contactor solenoid circuit. Overload protection is obtained by a multiple-element overload relay in con-

the function of the auxiliary being to compensate for small irregularites in the overhead wire.

The pantograph is light in weight but strong and rigid. As this is the most vulnerable part of a locomotive, and the most liable to damage, it is constructed for quick and easy repair and maintenance. A special valve in the air supply to the compressed air cylinder controls the speed of the pantograph during the initial raising and final lowering operations. Under the control of this valve, the pantograph rises slowly to ensure no shock to, or bouncing on, the overhead wire when contact is made. In lowering, the initial



Master controller, with accelerating control on right and motor combination and reversing levers on left



Electric boiler for heating steam train type rolling stock

movement is rapid in order to break any current that may be passing and thus avoid possible burning of the wire; while the final movement is slow to prevent shock to the locomotive roof.

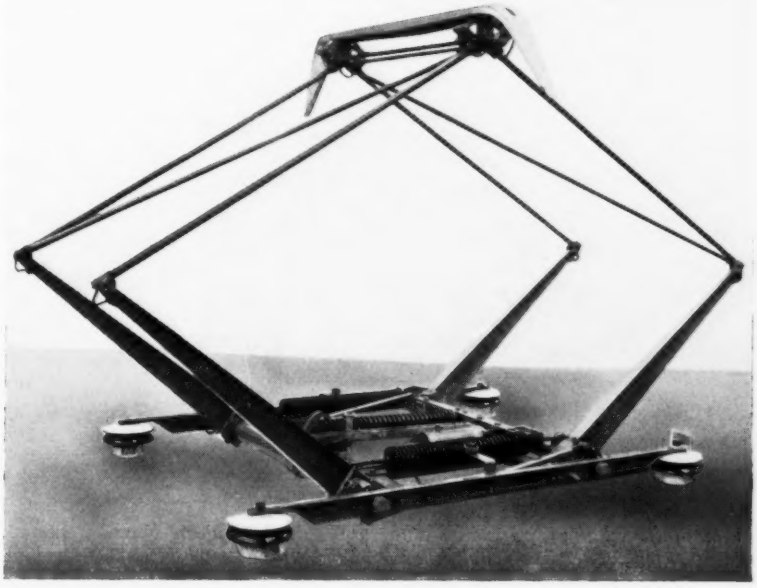
Owing to the low weight of the moving parts, the upward acceleration of the collector shoe is very great, ensuring continuous contact on a rapidly rising overhead wire. The main shafts are hollow, rotating round a fixed inner shaft on two large ball bearings. The torsional rigidity of the large hollow shafts, together with the great rigidity of the pressed steel lower moving arms, give to the moving structure the great lateral rigidity which is so desirable where clearances between pantograph and fixed road structures are necessarily small.

The collector shoe is a galvanised steel pressing and is equipped with cadmium copper wearing strips arranged for easy removal and replacement. Two torque rods are provided in the collector shoe support mechanism to ensure that both sets of auxiliary springs take an equal share of the shoe contact pressure irrespective of the position of the contact wire on the collector shoe, thus also minimising movement and wear of the support mechanism which occurs with the usual arrangement of collector shoe suspension.

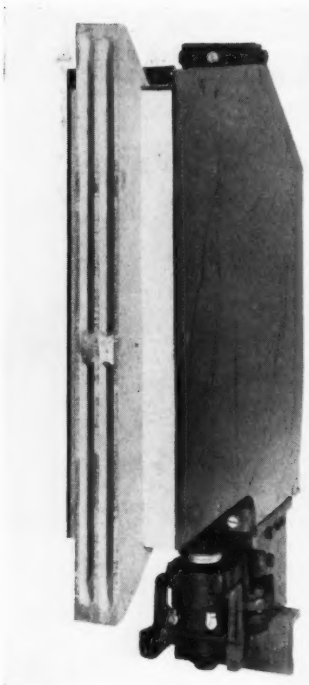
The tubes of the upper moving structure are of light gauge steel and are rigidly clamped to aluminium alloy fittings. The brazing of tubes into fittings is thus avoided and replacement of a damaged tube is easily and quickly carried out. All bearings in the moving structure have stainless steel bushes with phosphor bronze pins, thus avoiding wear due to rust. Bearings are fitted with nipples for grease gun lubrication and have flexible copper shunts to by-pass current.

There are 33 electro-pneumatic unit switches, all similar in construction and rated at 250A., 3,000V. They are identical and interchangeable with the unit switches with which all previous locomotives have been equipped, and therefore require no special provision as regards spare parts. Both the magnet valve and the auxiliary interlocking switches are located at the front, thus facilitating inspection, adjustment, and light maintenance.

The unit switches are assembled on two



Pantograph, showing auxiliary spring mounting of current collector



Line contactor, double-cell arc chute

vertical steel bars insulated with Bakelised paper, and are provided with an exceptionally powerful magnetic blow-out system capable of rupturing the heaviest fault currents. The six units comprising the line switches are provided additionally with special double-cell arc chutes, which greatly increase the length of arc extension and approximately double the maximum rupturing capacity of the switches.

Compressed air is used for closing the switch, which is opened by a powerful return spring inside the cylinder. The piston packing is of 3-ply leather assisted by 2-ply phosphor bronze expanders with serrated edges. A bearing is formed at the top end of the cylinder, through which the piston rod passes, and the moving contact is actuated through an insulating link connecting it with the piston rod.

The magnet valve is enclosed and is provided with easily removable valves and "banjo" type air connections. A cylindrical armature actuates the valves when the solenoid is energised.

The auxiliary interlocking switches are of the rubbing type with steel tips operating on hard drawn copper contact plates. The contact fingers are hinged, with helical pressure springs and screws for easy adjustment of contact wear.

There are two drum type reversers, one controlling the fields of motors 1, 2 and 3, and the other the fields of motors 4, 5 and 6. They are rotated by a double-ended piston through a rack and pinion. The piston packing is 3-ply leather with 2-ply serrated-edge phosphor bronze expanders. Compressed air supply to the reverser cylinder is controlled by two magnet valves, one at each end. The auxiliary interlocking contacts are of the rubbing type similar to those employed on the unit switches.

The accelerating resistances are of the cast iron grid type, mounted on heavy Micanite-insulated rods between pressed steel end frames. Additional secondary insulation is provided between the rods and end frames, and tertiary foot insulation between end frames and mounting structure. There are two sizes of cast iron grid, the smaller and lighter section being used for the initial resistance stepping and consisting of 10 frames; while the larger and heavier section is used for the remainder and consists of 16 frames.

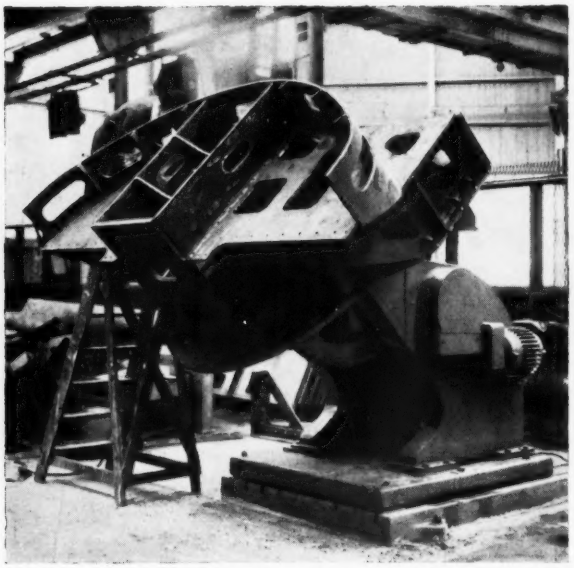
The weight of active material is sufficient to meet all ordinary and emergency service with the heaviest train on the steepest grade without exceeding the normal temperature rise. Contact is made between individual grids by silver-plated copper washers. The contact pressure is maintained under all conditions of expansion and contraction by a heavy-section helical spring on one end of each of the tie rods.

Vibrating carbon contact moving coil type voltage regulators maintain a constant potential at the generator terminals of 110 volts. They are rapidly responsive to changes in line voltage and generator load. The moving system of the regulator is pivoted on hardened and finely ground steel knife edges and carries the moving coil and centre carbon contact. Two fixed coils provide the main yoke flux, while a spring provides the force necessary to balance the pull of the moving coil.

(To be continued)

LAKE WINDERMERE STEAMERS.—Nearly 45,000 more passengers than last year were carried by British Railways steamers on Lake Windermere during the summer; total passenger journeys were 322,378. A description of the new Bowness Pier, built by the London Midland Region to deal with Lake Windermere steamer traffic, was given in our August 26 issue.

Welding Jigs for Fabricating Dragboxes



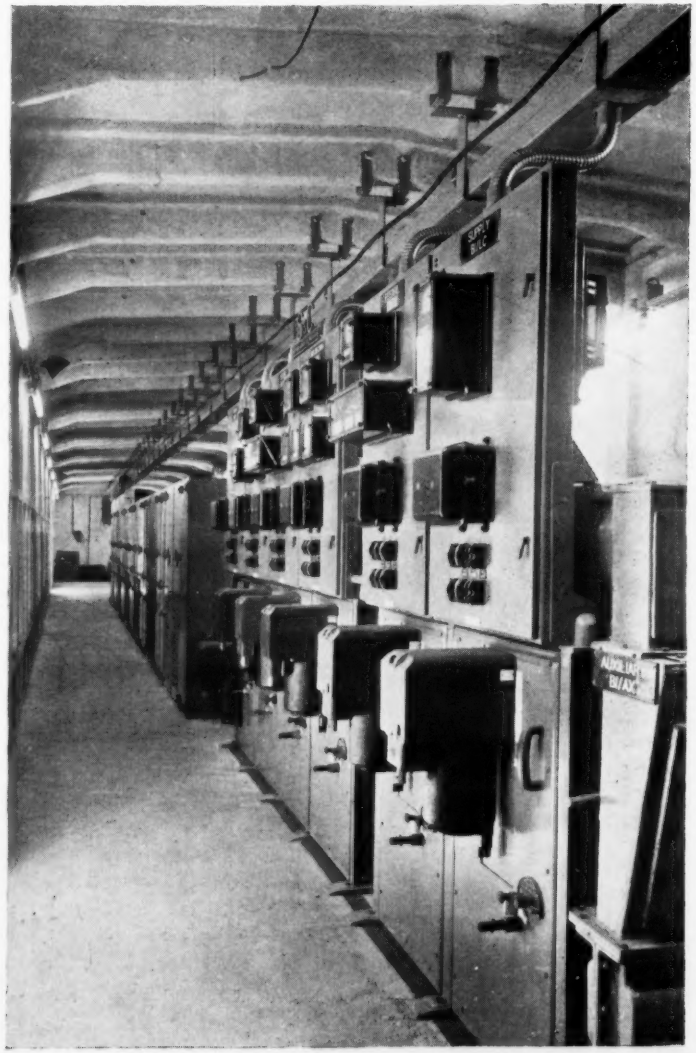
View of the welding jigs installed at the works of the Vulcan Foundry Limited, Newton-le-Willows, showing the methods adopted for fabricating the dragboxes of the fifteen 3,000-h.p., 3,000-volt d.c. electric locomotives under construction at these works for main-line operating between Moocha and Jundiahy on the former San Paulo Railway (see article in our November 4 issue)

Power Supply for Liverpool—Southport Electric Lines, L.M.R.

(*See article on page* 643)

Exterior view of new control room at Hall Road, Liverpool to Southport line, initiated by the former L.M.S.R.

Interior of Hall Road control room showing control desk in use



Bank Hall (No. 1) substation showing 11 kV. switchgear

Replacement of Pecos Bridge, Southern Pacific Railroad

The famous 320-ft. high Pecos bridge is now being dismantled, having been replaced by the handsome cantilever structure completed in 1944

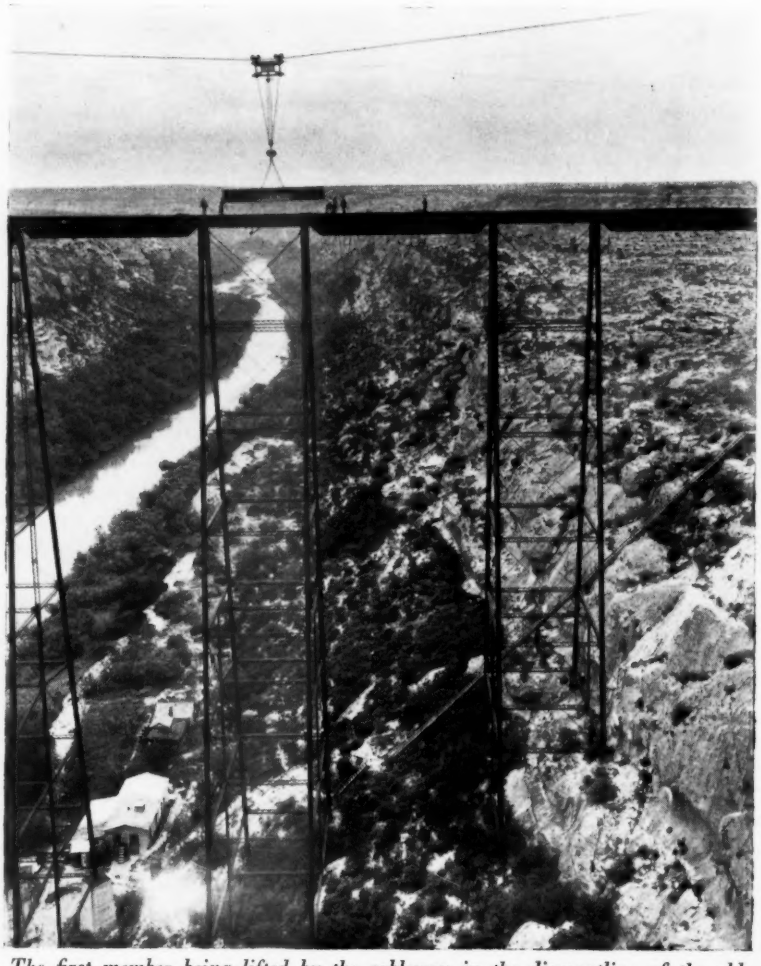
THE long-famous Pecos Bridge, which even after strengthening in 1909 still looked a most flimsy structure, was for many years the highest railway bridge in the United States. It was built by the Galveston, Harrisburg & San Antonio Railway, a component of the present Southern Pacific system. It was 2,180 ft. in length and over 320 ft. high above river low-water level. The main spans consisted of two 85-ft. cantilevers, two 33-ft. tower spans, two 52-ft. lever arms, and an 80-ft. suspended span. These were flanked by eight 65-ft. truss spans, one 45-ft. plate-girder span, and 34 34-ft. girder spans. All were deck spans, and were supported by very high trestles, resting in one instance on an abnormally high pedestal. As originally built this bridge was only up to Cooper's A loading (E.25).

The strengthening in 1909 increased its capacity to E.55, principally by adding a third central and vertical column to each bent of the four highest trestles supporting a third line of trusses on the centre line of the bridge. At the same time a 665-ft. length of approach spans was replaced by fill at the west end of the structure. A small amount of additional strengthening in 1929 enabled the bridge to be rated at Cooper's E.60 loading for trains passing over it at not more than 12 m.p.h.

The new bridge consists of two 85-ft. plate-girder spans, two 160-ft. anchor arms, two 267-ft. side spans, and a central 375-ft. span. It was completed and opened for traffic in 1944, but the old bridge is only now being dismantled. The new structure was recently adjudged to be one of the most handsome bridges, rail or road, constructed in the North American Continent during the past six years.

A single 2¼-in. dia. steel cable, 1,500 ft. long, over the old bridge and supported by two 130-ft. high towers, is being used for dismantling. With it, sections of the old structure weighing up to 12 tons can be lifted and removed even from the centre of the bridge. This method was adopted because the rugged sides of the gorge at this point made dismantling from the ground impracticable. Also, in order to prevent structural failure, dismantling of the cantilever part of the bridge had to be carried out exactly, but inversely, to the order in which it was erected.

We are indebted to our American contemporary *Engineering News-Record* for these details and for the illustrations.



The first member being lifted by the cableway in the dismantling of the old Pecos River Bridge

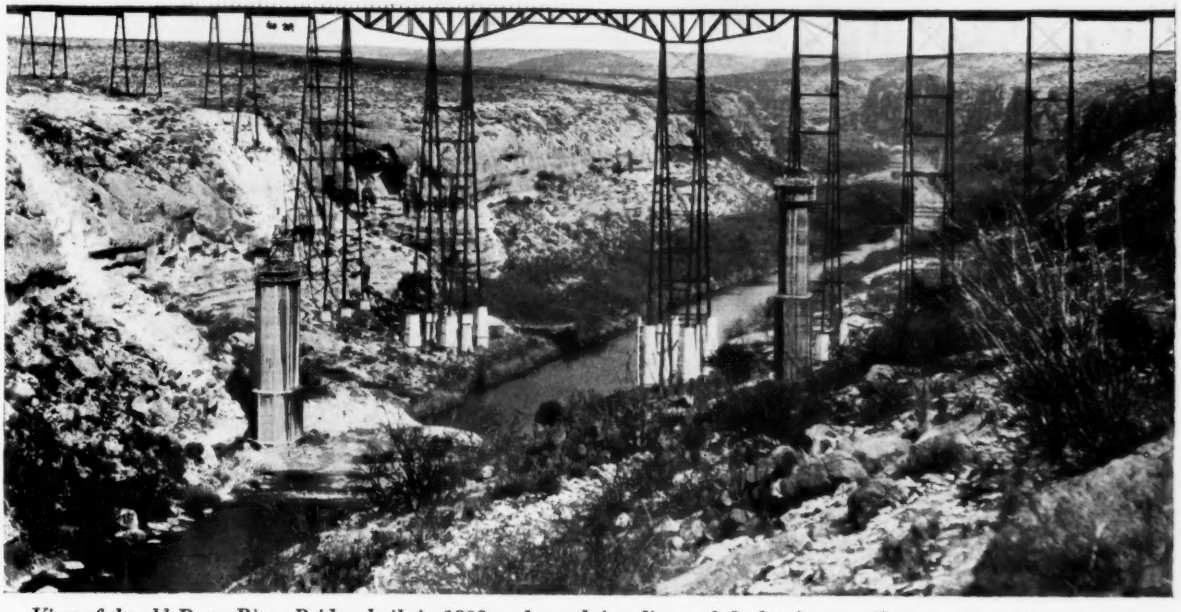
I.O.T. METROPOLITAN SECTION ANNUAL DINNER.—Nearly 100 members of the Metropolitan Section of the Institute of Transport and their guests foregathered at the St. Ermin's Hotel, Westminster, under the chairmanship of Mr. G. F. Sinclair, C.B.E., on Thursday of last week, November 24, for the second annual dinner of the Section. As it was intended that the gathering should be regarded as entirely social, speeches were kept to the minimum. Brig.-General Sir H. Osborne Mance, K.B.E., C.B., C.M.G., President of the Institute, and Lady Mance were present, and joined with the chairman in receiving the guests. The President also proposed the toast of "The Metropolitan Section," and invited the gathering to send good wishes to the new Section which was being launched that evening at Canterbury. The Chairman responded. The toast of "The Visitors" was proposed by Mr. David Blee, a Vice-Chairman of the Section, and a Member of the Railway Executive. The response was by Mr. John Benstead, C.B.E., Deputy-Chairman of the British Transport Commission, who emphasised the essential place of transport in increased production, and expressed the good wishes of the Commission towards the work of the Institute.

RAILWAY EXHIBITS AT THE FESTIVAL OF BRITAIN.—The chief railway display at the Festival of Britain Exhibition, to be held in London in 1951, as mentioned in our November 25 issue, will be of locomotives built for export by British firms, shown on sections of track. Another display will explain the design and construction of permanent way. A full-size cut-away exhibit will illustrate the many types of modern railway coach interior. A section on signalling will include a replica of the control panel at a London station, which will be a working exhibit connected by television with the station; many other types of signalling equipment will be shown. London Transport Underground will be represented mainly by models, with one of the latest passenger coaches. A travelling post office will be shown, and a section of the Post Office tube railway, with a train running on the track.

NEW TICKET-BOOKING FACILITY.—In addition to the stations from which tickets can be issued for journeys commencing at any of the London termini, the following Eastern Region suburban stations have been brought within the arrangement from December 1: Hornsey, Wood Green, Potters Bar, Bowes Park, Stamford Hill, White Hart Lane, Lower Edmonton, Lea Bridge, Leytonstone High Road, Manor Park, Woodgrange Park, Wanstead Park, Harringay, Hadley Wood, Grange Park, Gordon Hill, Bush Hill Park, West Green, Northumberland Park, Angel Road, Brimsdown, Enfield Lock, Blackhorse Road, Palace Gates. The classes of tickets covered by the arrangement are first and third class ordinary single and return tickets and monthly return tickets.

Replacement of Pecos Bridge, Southern Pacific Railroad

The new Pecos River Bridge, completed in 1944 and considered to be one of the most handsome American steel bridges constructed in recent years



View of the old Pecos River Bridge, built in 1892 and now being dismantled, showing cantilever, tower, and truss spans, high trestles, and abnormally high pedestal

Victorian Railways Refreshment Services

Modern fruit-drink stall at Flinders Street, the principal Melbourne passenger station of the Victorian Railways

Air-conditioned steel buffet car built at the Newport works of the Victorian Railways, as running in principal main-line trains. The buffet serves grills, light refreshments, and hot and cold drinks

RAILWAY NEWS SECTION

PERSONAL

BRITISH RAILWAYS APPOINTMENTS

The Railway Executive announces that, with the concurrence of the British Transport Commission, the following appointments are being made with effect from January 1, 1950:—

Mr. P. R. Hickman, Stores Superintendent, London Midland Region, Euston, to be Chief Officer (Stores) at Railway Executive Headquarters, in succession to Mr. A. W. Norman, who is retiring.

Mr. A. B. MacLeod, Stores Superintendent, Southern Region, Waterloo, to be Stores Superintendent, London Midland Region.

Mr. T. H. Hollingsworth, Principal Assistant to the Commercial Superintendent, Western Region, Paddington, to be Commercial Superintendent, Scottish Region, Glasgow, in succession to Mr. W. Yeaman, who is retiring.

Major-General Sir H. Reginald Kerr, Divisional Manager, Midland Division, Road Haulage Executive, has been appointed Representative Colonel Commandant of the Royal Army Service Corps for the period January 1 to December 31, 1950.

Mr. R. C. Vaughan, who retires at the end of the year as Chairman & President of the Canadian National Railways, is retiring also from the Presidency of the Central Vermont Railway from December 31, and Mr. Donald Gordon, Chairman & President-designate of the Canadian National Railways, has been elected by the Central Vermont board to succeed him. Mr. J. Harold Stacey has been elected a Director of the Central Vermont, in succession to the late Mr. H. R. Pierce.

We regret to record the death on November 25, in his 91st year, of Mr. Edwin James Pounds, sometime Registrar, London Chatham & Dover Railway.

ENGLISH ELECTRIC GROUP APPOINTMENTS

The following announcements are made by The English Electric group:—

The board of The English Electric Co. Ltd. has appointed Mr. H. G. Nelson to be Deputy Managing Director of the company; Mr. Nelson will relinquish his appointment as Managing Director of D. Napier & Son Ltd., but will retain his seat on the boards of that company, of Marconi's Wireless Telegraph Co. Ltd., of English Electric Valve Co. Ltd. and English Electric Export & Trading Co. Ltd.

Mr. H. Sammons has been elected to the board of D. Napier & Son Ltd., and appointed Managing Director.

Air Vice-Marshal Sir Conrad Collier, who took up an appointment with The English Electric Co. Ltd. on December 1, has been elected to the board of D. Napier & Son Ltd., and will act as consultant to Marconi's Wireless Telegraph Co. Ltd.

Mr. R. G. Wishart, who, as recorded in our September 23 issue, has been appointed to succeed Lt.-Colonel N. C. Harris, on his retirement, as Chairman of the Railways Commission of the State of Victoria in January next, has been a Commissioner of the Victorian Railways since 1940. He joined the Transportation Branch of the Railways Department as a junior clerk in 1906, and, after being transferred to the Secretary's Branch in 1915, occupied a variety of important administrative posts. He accompanied the then Chairman of Commissioners, Sir Harold Clapp, on a world tour in 1934.

Mr. R. G. Wishart

Appointed Chairman of the Railways Commission, State of Victoria, from January next

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Mr. E. C. Woodall has joined the board of the Ford Motor Co. Ltd.

We regret to record the death on November 19, in his 67th year, of Mr. Henry William Harris, sometime Works Manager, East Indian Railway.

Mr. J. S. Evenden retires on December 31 next from the service of the Superheater Co. Ltd., but will be retained as a consultant, and Mr. K. E. Merefield will, as from January 1, become Sales Engineer of the Power Plant Department. Mr. F. D. Playford also retires on December 31, and will be retained as consultant; Mr. E. Lawton will succeed him as Sales Engineer of the Locomotive Department. Mr. R. S. York retires on December 31 as Managing Director of the Superheater Co. (Australia) Pty. Ltd., but will occupy the position of Deputy-Chairman of that company; Mr. R. K. Dixon will succeed him as Director & General Manager as from January 1.

We regret to record the death, at the age of 64, of Mr. Thomas Meageen, Chairman & Managing Director of Cumberland Motor Services Limited.

Mr. H. E. Osborn has been appointed a Director of the East Kent Road Car Co. Ltd., in place of Mr. J. C. Chambers, who has resigned

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Mr. D. G. Stokes has been appointed General Sales Manager of Leyland Motors Limited with control of the company's sales activities both at home and overseas. He has hitherto been Export Manager.

Mr. C. H. Bradbury has been appointed Chief Engineer of Petters Limited, Small Engine Division, at Staines. He was Chief Research Engineer of Ruston & Hornsby Limited from 1938 to 1948, and this year was appointed Chief Research Engineer of Ruston & Hornsby Limited and Davey, Paxman & Co. Ltd. (Colchester).

Mr. P. E. M. Sharp has taken up an appointment as Industrial Officer (Electronic Equipment) with the Council of Industrial Design, and will be responsible, among other matters, for liaison between manufacturers of electronic equipment and the 1951 Festival of Britain organisation. He was until recently with Standard Telephones & Cables Limited.

We regret to record the death on September 17, at his birthplace, Lakeville, Connecticut, U.S.A., at the age of 82, of Mr. Alexander Holley Rudd, the well-known signal engineer. He entered the service of the Pennsylvania Railroad in 1886 as a draughtsman in the Estate Department, but transferred to the Signal Department in 1888. He left that railway in 1892 to become a signal inspector on the New York Central, becoming Signal Engineer not long afterwards. Later he went to the New York, New Haven & Hartford Railroad and became eventually a Divisional Signal Engineer. In 1900 he was appointed Signal Engineer of the Delaware, Lackawanna & Western Railroad, returning to the Pennsylvania in 1903. He was made Signal Engineer, Lines East, in 1907, and, in 1920, Chief Signal Engineer of the Pennsylvania system, retiring in 1937. He was President of the then Railway Signal Association of America in 1908, and was very active in its work, and in that of the associations which succeeded it, for many years, and was an Honorary Member of the Institution of Railway Signal Engineers. Some reference to developments in American signalling during Mr. Rudd's career is made on page 636.

Mr. D. W. Elliker

Appointed Assistant Accountant, London Midland Region

Mr. C. J. Chaplin

Appointed Assistant Engineer (Maintenance), London Midland Region

Mr. F. W. Moxon

Appointed Cartage Assistant to Commercial Superintendent, London Midland Region

Mr. D. W. Elliker, who, as recorded in our November 18 issue, has been appointed Assistant Accountant, London Midland Region, British Railways, was previously Assistant to the Accountant (Book-Keeper). He was born in May, 1893, and was educated at Uttoxeter Grammar School, and in 1910 joined the Midland Railway in the Accounts Department. After serving in the 1914-18 war with the 8th Hussars, and finally with the Machine Gun Corps Cavalry, in which he obtained a commission and was mentioned in despatches, he re-entered railway service in 1919. On the formation of the L.M.S.R. in 1923 he was transferred to the Chief Accountant's Office at Euston. Mr. Elliker became Head of Accounts Receivable Section in 1933, Assistant Book-Keeper in 1937, and Assistant to Chief Accountant (Book-Keeper) in November, 1947.

Mr. C. R. Petrie has been re-elected President of the Society of British Paint Manufacturers.

Sir Miles Thomas, Chairman of the British Overseas Airways Corporation, has been elected President of the Advertising Association, in succession to Mr. Oliver Lyttelton.

Mr. N. Howell has been appointed General Manager of the Tudor Accumulator Co. Ltd., subsequent to the recent retirement from that position of Mr. P. Cattermull. Mr. Howell joined the company as Works Manager in 1945.

Mr. C. J. Chaplin, District Engineer, Bradford, London Midland Region, British Railways, who, as recorded in our November 18 issue, has been appointed Assistant Engineer (Maintenance), Euston, served a two-years pupilage from 1922-24 under Mr. E. F. C. Trench, then Chief Engineer, L.N.W.R., and afterwards L.M.S.R., and subsequently spent five years on new works, which included the widening of the former Lancashire & Yorkshire main line between Horbury and Wakefield. In 1929 Mr. Chaplin became a draughtsman in the District Engineer's Office, Walsall, and in 1933 was appointed Assistant to District Engineer, Bangor. He was made Assistant to District Engineer, Liverpool, in 1937; in 1942 he was appointed Acting District Engineer, and in 1945, District Engineer, Derby (South). He became District Engineer, Bradford, in September, 1947.

Mr. R. J. Frizzell has been invited to become General Manager on a permanent basis of the Northern Ireland Tourist Board. He has been Acting General Manager for the past month in an honorary capacity.

ROAD HAULAGE EXECUTIVE

The Road Haulage Executive announces the following appointments:—

Mr. J. N. Bamforth, Regional Research Officer, South Western Region, Board of Trade, to be Welfare Officer at the Executive's Headquarters.

Mr. A. E. Greatorex to be Divisional Stores Officer, Western Division, from January 1.

Mr. Smelter J. Young has retired from the Chairmanship, which he has held since 1919, of the A.B.C. Coupler & Engineering Co. Ltd., but remains a Director. Mr. Young's son, Mr. Gerard Young, who has been a Director for a number of years, has been elected Chairman. Mr. J. B. Curry continues as Managing Director and Mr. G. T. Bowerman as Director & Secretary.

Mr. Frank W. Moxon, M.M., who, as recorded in our November 18 issue, has been appointed Cartage Assistant to the Commercial Superintendent, Euston, London Midland Region, British Railways, entered the service of the Lancashire & Yorkshire Railway in 1909, and obtained experience in passenger and goods department work at various stations. While serving in the 1914-18 war he was severely wounded, and was awarded the Military Medal. He resumed his railway career in 1918, and, after serving at various goods stations, was employed in the Cartage Departments in Manchester and London; in 1931 he became Chief Cartage Clerk at Sheffield. From 1936 Mr. Moxon served as Goods Agent at Rotherham, Sheffield, Nottingham and St. Pancras & Somers Town. He was Assistant District Goods Manager at Birmingham from October, 1943, to September, 1945, when he became Station Working Assistant at Broad Street District Goods Manager's Office. He was made Assistant District Goods Manager, Broad Street, in October, 1946.

The headquarters of the Diesel Engine Division of The English Electric Co. Ltd. has been transferred to Brownsover Hall, Rugby, where the administrative work, and that of the sales, estimating, contracts, and design departments is carried out. Mr. A. V. Wilkin, General Manager of the Division, has made the following appointments:—Mr. C. R. Parker, Assistant General Manager; Mr. L. I. Hadlow, Chief Estimating Engineer; Mr. G. N. Petty, Chief Sales Engineer; Mr. F. V. Morgan, Chief Contracts Engineer; and Mr. J. A. Barker, Chief of the Dual Fuel Department.

Dr. Fritz Busch, who, as recorded in our November 11 issue, has retired from the position of General Manager of the German Federal Railways, on attaining the age limit, was born in Arnsberg, Westphalia, where his father was a schoolmaster. After completing his legal studies and three years in the legal profession, he began his railway career with the Prussian State Railways, serving at Halle, Cologne and Cassel. In 1931 he was transferred to the State Railways' Central Office in Berlin, whence he was appointed, in 1933, Section Head in the Finance Division of the German State Railways' Head Office. After the end of hostilities in 1945 he was appointed by the Western Allied Powers as a member of the Advisory Committee on German Transport; and in September, 1945, he was appointed Head of the Finance & Legal Department of the newly-formed General Management of the German Railways in the British Zone, and, in addition, Deputy General Manager. In September, 1946, the British authorities appointed him General Manager of Railways in the British Zone, and a few weeks later he was made General Manager of Railways in the combined British and American Zones.

Parliamentary Notes

Proposed Increases in Freight Charges

Minister of Transport gives reasons for British Transport Commission's application

Mr. Alfred Barnes, Minister of Transport, informed the House of Commons on November 28 that the British Transport Commission had applied to make regulations under Section 82 of the Transport Act, for the purpose of authorising an increase in certain charges.

In his statement, Mr. Barnes said they would be aware that the net revenue deficiency for 1948 was £4¾ million, and that the B.T.C. indicated in paragraph 69 of its first annual report, that a further marked deterioration of the working results in 1949 was inevitable.

At present it appeared likely that the net revenue deficiency for the current year would exceed £20 million, and that it would be greater in 1950 on the basis of existing charges, apart from any question of recouping the accrued deficiency. He considered it expedient that the question of an increase in charges should be examined with the least possible delay.

He had, accordingly, in conformity with the provisions of Section 82 of the Transport Act, decided to consult with the permanent Members of the Transport Tribunal acting as a consultative committee, and in doing so he had expressed the view that they would no doubt think it desirable to consult with such representative bodies of traders and shipping as they thought fit and take their views into consideration. The Commission did not propose any increase in passenger fares and he was in agreement with them on this point.

Sir David Maxwell Fyfe (Liverpool, West Derby—Con.), asked whether the charges proposed by the B.T.C. purported to be based on the principles of transport charges in the formulation of which the B.T.C. in its report said that it had made progress, and what was the estimated effect of the increase in the charges on the price of export goods?

Mr. Barnes, replying, said it was essential that this statement should be made today so that Members would have sufficient time to consider its implication in preparation for the forthcoming debate, which would enable them the better to discuss its implications. The uniform increase proposed was not based in any way on principles likely to emerge in the charges scheme as laid down in the Transport Act. It followed the method which had been adopted since the end of the war of a flat-rate increase and did not in any way anticipate the preparation of charges scheme or the principles on which they would be based.

Effect on Export Costs

With regard to the impact of these charges on export costs, what they had to bear in mind was that the charges of the railways had been increased by 55 per cent., whereas their weighted average of expenses had increased at the rate of 120 per cent. As the Commission pointed out, although it had been reluctant to avail itself of the emergency provisions provided in the Transport Act, nevertheless it could not indefinitely go on meeting rising expenses when revenues and passenger receipts were not equally increased.

Mr. Clement Davies (Montgomery—Lib.), said that as this was a matter which was bound to have a deleterious effect on all trade, he would like to ask whether it would not be right to make a full inquiry into the efficiency with which the industry was run before the charges were increased. Was it now to be taken as the settled policy of the Government that when there was a loss on a nationalised industry, for whatever cause, that loss was to be passed on to the public, thus wiping out the claim that the industry was being run inefficiently.

Mr. Barnes replied that one could hardly raise a question of efficiency in a matter of this kind, when they had to consider the rather brutal fact that the charges in the industry had increased only 55 per cent., which was the lowest percentage increase of any service or product of a major character in this country. During this period every other industry had been raising its prices.

Prices and Wages

The railways were heavy consumers of steel, coal, and timber, and a great variety of other products. The wages of railwaymen and railway operatives must move with the general increase of wages in the community. What other industry was bearing a weighted average increase of 120 per cent. in expenses and costs of materials while securing only 55 per cent. in its charges?

Mr. Ernest Davies (Enfield—Lab.), asked whether in view of the ill-effect on the cost of livng and the general costs of production of a general rise in railway charges, the Minister before implementing the report of the Tribunal would give full consideration to subsidising the tranport industry rather than putting up the charges until the full charges scheme could be brought into operation and the full effects of the integration and coordination of the industry were felt.

Mr. Barnes replied that when he obtained the report of views of the permanent members of the Tribunal in a consultative capacity, full consideration would be given to its implications.

Professor D. L. Savory (Belfast University—Con.), asked whether the Minister estimated that these increased charges would cover the deficit.

Mr. Barnes: The application is being made for the purpose of preventing this loss from accumulating prior to the introduction of the charges scheme.

Mr. Anthony Eden (Warwick and Leamington—Con.), asked the Minister whether, quite apart from questions of efficiency or inefficiency in respect of the industry, the Government as a whole had made an estimate before considering these new charges or their effect on trade and particularly on the export industry.

Mr. Barnes replied that all these matters had been taken into consideration, and, while he could not indicate the percentage increase on costs which this would represent to every industry and every product, nevertheless its general implications on industry, prices, and costs of production had been taken into consideration.

Brigadier O. L. Prior-Palmer (Worthing—Con.), asked whether any consideration had been given to exempting goods for export from these charges?

Mr. Barnes: No. I would emphasise that at the moment my decision has been to refer this to the Tribunal.

Mr. A. Edward Davies (Burslem—Lab.), asked what reason there was to suppose that the railways could earn a revenue if their charges were to be increased, when they could not earn one at the moment, and would not the proper answer be a speedier integration and coordination of the services.

Major H. R. Spence (Aberdeen & Kincardine Central—Con.), asked whether, bearing in mind the vital importance of this matter to the export industry, the Minister could say approximately when the new charges would become effective.

Mr. Barnes replied that he could not give a date. When they studied his statement Members would see that he had indicated to the Tribunal that he should wish them to consult representatives of trading and shipping interests.

Mr. J. A. Boyd-Carpenter (Kingston-upon-Thames—Con.), asked if the Minister could say approximately how long he expected the consultations of the permanent members of the Tribunal to take. Could he also say whether, when his decision has been made, the regulations which he would make would be subject either to affirmative or negative procedure in the House.

Mr. Barnes: I should hesitate to embarrass the members of the Tribunal by making any statements on time here today.

Mr. C. Williams (Torquay—Con.): Has the Minister had any direct consultation with the Minister of Agriculture as to the effect which the increased charges are likely to have on both agriculture and market garden produce?

Mr. Barnes replied that all Departments affected had been consulted.

Mr. Schofield Allen (Crewe—Lab.), asked if Mr. Barnes would say what was the percentage increase on pre-war on the freights of privately-owned steamships operating on the ocean?

Mr. Barnes, replying, said he could not quite say that, but he could indicate that if by any chance an increase of 16⅔ did emerge from these deliberations, it would represent an increase in railway charges on freights of 80⅛ per cent. on pre-war charges. With regard to dock dues for seagoing vessels the charge would be 100 per cent. over pre-war rates.

Mr. A. Marlowe (Brighton—Con.): As the Minister says that the full implications of this have been considered, can he tell the House, first, the extent to which the increased cost of coal will offset devaluation, and, second, to what extent the 25 per cent. increase for coastwise shipping would increase the price of coal to domestic consumers?

Mr. Barnes said he could not yet give the percentage increase on every product. He would remind Members, however, that at this stage there was an application by the Commission.

Opposition Amendment

The Opposition on November 29 tabled in the House of Commons its amendment to the Government motion asking the House to take note of the British Transport Commission report and accounts. The amendment includes the words: "but regrets the loss sustained in 1948, the further marked deterioration disclosed in 1949, the mounting costs, and the increased fares and rates so detrimental to the public."

The report and accounts were to be debated in the House on December 1.

Application for Increased Freight Rates

Schedule of theproposed charges

The British Transport Commission has applied to the Minister of Transport for authority under Section 82 of the Transport Act, 1947, to raise certain charges, which are regulated by statutory provisions defined in the Act. The proposed increases are set forth in the following schedule:—

Part I: Railways
Charges other than those for the Conveyance of Passengers and their Luggage

1. Charges other than those referred to in Paragraphs 2, 3 and 4 hereof:—

An additional charge equal to 16⅔ per cent. of the charge for the time being in operation under the statutory provisions subject to the application of Fractions Rule A set out in Paragraph 5 hereof.

2. Charges in respect of small parcels (other than returned empties) by merchandise train:—

The additional charge per consignment (hereinafter in this paragraph called "smalls bonus") authorised under Part V of the Schedules of Standard Charges settled under the Railways Act, 1921, to be increased by an additional charge equal to the difference between (i) the smalls bonus authorised to be made under the said Part V, and (ii) a smalls bonus ascertained in accordance with the Scale set out hereunder but with the rate per ton by which such smalls bonus is ascertained increased in accordance with paragraph 1 hereof.

	Per ton	Additional charge per consignment
On rates not exceeding ...	18s.	7d.
,, ,, ,, ...	36s.	9d.
,, ,, ,, ...	54s.	11d.
,, ,, ,, ...	90s.	1s. 1d.
,, ,, ,, ...	126s.	1s. 2d.
,, ,, ,, ...	180s.	1s. 4d.
,, exceeding ...	180s.	1s. 6d.

3. Charges continued under the provisions of Section 34(2) of the Railways Act, 1921:—

An additional charge equal to 16⅔ per cent. of the charge for the time being in operation under the statutory provisions subject to the application of Fractions Rule B set out in Paragraph 5 hereof.

4. Charges agreed under the provisions of Section 37 of the Road and Rail Traffic Act, 1933:—

An additional charge equal to 16⅔ per cent. of the charge now in operation under the Agreement (including any modification or additional charge heretofore authorised to be made under any statutory provision) subject to the application of the Fractions Rules set out in Paragraph 5 hereof as follows:—

(i) In the case of charges on a "Per Ton" basis Fractions Rule A shall apply.

(ii) In the case of charges on a "per package," "per consignment" or "per gallon" basis Fractions Rule B shall apply except that where the charge in operation is expressed in terms including decimals of one penny the additional charge shall be the actual amount calculated by reference to the charge in operation and no Fractions Rule shall apply.

5. The Fractions Rules referred to in this Part of the Schedule are:—

Fractions Rule A—In determining the amount of the additional charge, fractions of 1d. if less than one-half to be dropped, if one-half or more to be charged as 1d.

Fractions Rule B—In determining the amount of the additional charge, fractions of 1d. if less than one-quarter to be dropped, if one-quarter and less than three-quarters to be charged as ½d., if three-quarters or over to be charged as 1d.

Part II: Harbours, Docks and Piers

1. The additional charges referred to in Paragraphs 2, 3 and 4 of this Part to be authorised at the following harbours, docks or piers:—

Aberdovey Harbour; Barry Docks; Brentford; Bridgwater Dock; Briton Ferry Dock; Burry Port; Bute Docks, Cardiff; Alloa Harbour and Dock; North Blyth Staiths; South Blyth Staiths; Bo'ness Harbour and Dock; Burntisland Harbour and Docks; Charlestown Harbour; Wyre Docks.

Foryd Wharf; Garston Docks; Newport Docks; Penarth Harbour and Dock; Plymouth Docks; Port Talbot Docks; Swansea Docks; Harwich Quays and Piers; Hull Docks; Immingham Dock; Lowestoft Harbour; Mallaig Piers.

Gravesend Floating Stages; Cowes (Medina Wharf); Folkestone Harbour; Gravesend Pier and Basin; Langston Wharf; Newhaven Harbour; Port Victoria; Queenborough Pier; Chelsea Basin; Lydney Harbour and Dock; Highbridge Dock; Dunball; Fishguard Harbour; Llanelly Dock.

Parkeston Quay; Percy Main (Northumberland Dock) Staiths; Pettycur Harbour; Silloth Dock; Winteringham Haven; Kincardine Pier and Harbour; Heysham and Morecambe Harbours; Holyhead Harbour; Kentallen Pier; Kyle of Lochalsh Pier.

Connah's Quay Dock; Craigendoran Pier; Dunstan Staiths; West Dunstan Staiths; Grimsby Docks; the docks at Hartlepool and West Hartlepool; Ayr Harbour; Barrow Harbour and Docks; Bowling Harbour; Deganwy Wharf; Fairlie Pier.

Fleetwood Harbour; Methil Harbour and Docks; Middlesbrough Dock; Gourock Pier; Grangemouth Harbour and Docks; Largs Harbour; Oban Pier; Poplar Docks; Renfrew Wharf; Stranraer East Pier.

Tilbury Floating Stage; Troon Harbour; Wemyss Bay Pier; Ryde Piers; St. Helens Wharf; Southampton Docks; Stonehouse Pool; Strood Dock; Whitstable Harbour; King's Lynn Docks; Goole Docks; Sharpness and Gloucester Docks; Weston Point Docks.

2. Dues on Vessels (including harbour, pier, and wet dock tonnage rates, light dues and rents) on vessels on voyage made wholly between ports within the United Kingdom, the Channel Islands and the Isle of Man:—

Subject to the provisions of Paragraph 5 hereof, an additional charge not exceeding 50 per cent. of the dues and other charges in force under any statutory provision on August 31, 1939, subject to the application of the Fractions Rule set out in Paragraph 6 hereof.

3. Dues on Goods or cargoes loaded at any port in the United Kingdom, the Channel Islands or the Isle of Man for discharge at any other such port:—

Subject to the provisions of Paragraph 5 hereof an additional charge not exceeding 50 per cent. of the dues and other charges in force under any statutory provision on August 31, 1939, subject to the application of the Fractions Rule set out in Paragraph 6 hereof.

4. All other rates, dues and charges:—

Subject to the provisions of Paragraph 5 hereof an additional charge not exceeding 100 per cent. of the rate, due or charge in force under any statutory provision on August 31, 1939 subject to the Fractions Rule set out in Paragraph 6 hereof.

5. No additional charge shall be authorised in the case of:—

(*a*) Labourage charges which have been varied since September 3, 1939, or which may hereafter be varied in consequence of alterations in rates of wages;

(*b*) Any charges in respect of through traffic which were increased under the provisions of the Railways (Additional Charges) Order, 1947, or the Railways (Additional Charges) (No. 2) Order, 1947;

(*c*) Rent on dry docks, other than slipways and gridirons.

6. Fractions Rule:—

In determining the amount of the additional charge fractions of a farthing if less than half-a-farthing to be dropped, fractions of a farthing if half-a-farthing or more to be charged as a farthing.

Canals & Inland Waterways

The Transport Commission has also applied to the Minister of Transport for authority by Regulations made under Section 82 of the Transport Act to make in respect of the services and facilities provided on their Canals and Inland Waterways, the charges for which are regulated by statutory provisions defined in the Transport Act, the additional charges specified hereunder:—

All Rates, Tolls and Other Charges.

An additional charge equal to 16⅔ per cent. of the rate, toll or other charge for the time being in operation under the statutory provisions subject to the application of the following Fractions Rule:—In determining the amount of the additional charge fractions of 1d. if less than one-half to be dropped, if one-half or more to be charged as 1d.

Staff & Labour Matters

T.U.C. Wages Policy

The T.U.C. General Council on November 23 approved the recommendations of its special economic committee asking the 190 affiliated unions to postpone wage claims as long as the retail price index, now at 112, remains below 118. The lower-paid worker may receive special consideration, and incentive schemes are suggested. The recommendations are:

(1) The dangerous inflationary tendencies which devaluation inevitably intensifies must be counteracted by rigorous restraints upon all increases of wages, salaries, and dividends.

(2) The existing machinery of voluntary negotiation must be preserved as the only method—and one which has proved successful—of governing the adjustment of wages and working conditions and maintaining the authority of unions in the day-to-day settlement of industrial problems.

(3) While it is the responsibility of unions themselves to operate the wages policy, they must have regard to the realities of the economic situation in framing their policy and act loyally in conformity with the policy now recommended by the General Council.

(4) The problem of the standard of living of lower-paid workers may call for consideration in certain cases, but in consideration of even such cases, regard must be had to the general economic problems necessitating rigorous restraint, and special regard given to the possibility of assisting lower-paid workers by incentive schemes.

(5) Unions should reconsider existing wage claims and sliding-scale arrangements with a view to holding agreed wage rates stable while the retail price index remains between 118 and 106, on the condition that if, and when, the index figure reaches either the upper or lower limit, both sides of any industry would be entitled to resume the normal consideration of wages

questions in accordance with their agreements, and that cost-of-living agreements would again operate. Should neither limit be reached before January 1, 1951, these arrangements shall continue until that date and be then reviewed.

(6) The General Council will intensify its campaign for increased productivity and efficiency in industry. The utmost publicity must be given in each industry to all constructive suggestions, not excluding overtime working.

(7) A review should be made within each industry with a view to extending systems of payment by results over the widest possible range, relating wages to output.

(8) The General Council will watch the operation of this policy, and will report periodically to affiliated unions.

The Prime Minister issued a statement on November 24 commending the T.U.C. recommendations. Mr. Attlee said: "Owing to full employment, the organised trade union movement has at the present time, and judged by traditional standards, a very powerful bargaining position. It knows that one of the results of the devaluation of the pound must be some rise in the cost of living. The General Council of the T.U.C. knows also that many of its constituent unions have wage claims in prospect, claims which must seem to them legitimate and reasonable again when judged by traditional standards.

"Yet the General Council has decided to disregard these powerful considerations of short-term self-interest and to be guided rather by their own balanced judgment of the nation's long-term needs. It has weighed up the Government analysis of the position and the need for some temporary measure of sacrifice by the community, and has reached a conclusion which pays regard both to that need and to the proper interests of the constituent unions.

"There is nothing in this decision, or its acceptance by the movement as a whole, to deprive workers of the hope of improving their material situation. This is not a 'wage freeze' in the sense that no one can earn any more. The decision is to suspend any movement of wage rates unrelated to the level of output. But it leaves wide open the door to higher earnings through improved productivity and greater efficiency.

"I hope, indeed, that these recommendations of the General Council will turn the attention of industry and commerce more fully to the opportunity of incentive schemes of all kinds which present the possibility of steady advancement to the individual, and of full recovery and continued progress to the nation."

On November 24 N.U.R. and R.C.A. delegates met to discuss the N.U.R. decision to apply for a wage increase for lower-paid railway workers, and a minimum £5 weekly wage. The meeting was largely exploratory because the R.C.A. has so far given no indication of supporting the claim, but it did accept the N.U.R. invitation to discuss the matter.

At a meeting of the Railway Shopmen's National Council on November 25 the Railway Executive declined the application submitted by the employees' side of the Council for the substantial increase in pay for railway shopmen, mentioned in *The Railway Gazette* October 28 issue. The claim eventually submitted was a compromise to bridge the gap between the Confederation and N.U.R. policies. The application for enhanced payment for Saturday afternoon working was also declined at the Shopmen's Council meeting on November 25.

The National Union of General & Municipal Workers, a constituent of the Confederation of Shipbuilding & Engineering Unions, announced on November 25 that its executive committee had resolved unanimously that "it was in the best interests of its members" to support the T.U.C. appeal for wage restraint. The union voted against the Confederation proposal to ask for a £1 a week increase, and, although it is one of the biggest unions in the Confederation, the motion was carried on a card vote. This decision may play a big part in influencing the other constituent unions.

Questions in Parliament

Railway Delays in Eastern Region

Lord Strabolgi, on November 22, in the House of Lords, asked His Majesty's Government if it was aware of the frequent and serious delays on the old Great Eastern section of the former L.N.E.R. (now British Railways) between Liverpool Street and various places in Norfolk, and particularly from Norwich to Liverpool Street; if it was aware that the reason usually given was points trouble; and would it state what were the technical or mechanical reasons for that, and whether any steps had been taken to effect an improvement.

Lord MacDonald of Gwaenysgor, in a written answer stated: This is a matter for the British Transport Commission. I have referred Lord Strabolgi's question to the Commission, and it will be communicating with him.

Economy Measures and Railway Works

Mr. A. H. Molson (High Peak—C.) on November 21 asked the Minister of Transport what effect the reductions in capital investment recently announced would have on the scheme put forward by the London Plan Working Committee to spend £340,000,000 on new tubes for Greater London, as described by him on July 4, 1949.

Mr. Alfred Barnes (Minister of Transport) stated in a written answer: As I explained in my answer to Mr. L. D. Gammans (Hornsey—C.) on November 14, the application of the recent capital cuts to railway works is now being worked out. It is unlikely, however, that they will have any immediate effect on the works proposed by the London Plan Working Party Report, because these are, in the main, long-term proposals on which relatively little expenditure could, in any case, have been incurred in 1950.

Reports and Accounts of Nationalised Industries

Sir Ralph Glyn (Abingdon—C.) on November 16 asked the Financial Secretary to the Treasury what restrictions had been placed on the size and form of the reports and accounts of the various nationalised undertakings; and what representations had been received from the boards proposing a different method of presentation.

Mr. Glenvil Hall (Financial Secretary to the Treasury) in a written answer stated: The National Coal Board and the British Transport Commission originally proposed that their reports and accounts should be published in a form different from the normal form of House of Commons papers. When they were made aware of the restrictions normally imposed on Parliamentary papers they agreed to conform, and no further representations have been received. The restrictions concerned were that the size of the page should be Royal octavo, that the title page should be in the customary formal style, and that the covers, if any, should be either in the normal wedgwood blue or cream cartridge paper.

Railway Construction in Tanganyika

Mr. A. R. Hurd (Newbury—C.) on November 21 asked the Minister of Food to state, separately, the sums expended, from the £8 million advanced to the Overseas Food Corporation since last March, on the construction in the Southern Province of Tanganyika of a railway and oil pipe line to Noli and sawmills.

Mr. John Strachey (Minister of Food): Over the financial year, the Corporation expects to spend some £625,000 for this.

Mr. Hurd: If the Minister will look again at the question, he will see that I asked him to give the amounts separately. Could he kindly do that?

Mr. Strachey: If Mr. Hurd wants detailed accounts, he should write to the Corporation, because, under the rules or the procedure which we have adopted in this House, I am not supposed to go into detailed questions on this matter. The information will be readily given to Mr. Hurd if he writes to the Corporation.

HULL PARAGON STATION TEMPORARILY CLOSED.—Because of relaying of intersecting track, which cuts across all the approach lines to the platforms, Hull Paragon Station, North Eastern Region, will be closed from 1 p.m. to midnight on Sunday, December 4. Trains will start and terminate at Hull Stepney Station, except trains to and from the Scarborough branch, which will start and terminate at Cottingham. A special bus service will be run between Cottingham Station and Hull Paragon departing at the scheduled train times. Train connections with the Scarborough branch will be maintained by special bus or rail.

IRISH TRANSPORT BILL DELAY.—A supplementary estimate moved in the Dail last week by Mr. Morrissey, Minister for Industry & Commerce, is for a sum of £4,091,000 needed to meet commitments of C.I.E., which have to be discharged before the end of the present financial year on March 31. The total original estimate provided for transport services in the financial year was £262,600, and the supplemental amount brings the grand total to £4,353,600. The new estimate was originally expected to come before the Dail this week in connection with the Committee Stage of the Transport Bill, of which a summary was given in our November 4 issue. Mr. D. Morrissey indicated in the Dail on November 23, however, that it was unlikely that the Transport Bill, 1949, would operate as intended from January 1, 1950. Mr. J. A. Costello, earlier, had said that the Committee Stage had been postponed so that deputies might study Government amendments.

STRIKE AT ST. PANCRAS DEPOT.—Loaders and checkers at St. Pancras Depot, London Midland Region, stopped work on November 25 in protest against a search by the Metropolitan Police of the homes of two of the men who had reported evidence of tampering with a package to British Railways police, but said that they had not been interviewed by the police in the usual way. An assurance was demanded from British Railways that such action would not be repeated. During the weekend the strike spread to cartage workers and over 1,100 men were involved. After a meeting on November 27, however, normal work was resumed at midnight.

British Transport Commission Statistics

*Summary of the principal statistics for the four-week period ended October 9**

Inclusion for the first time of British Railways collection and delivery services receipts is a step forward to showing all railway revenue; relatively few miscellaneous items are now not shown. The fall in cartage receipts of 0·98 per cent. from the corresponding figure for last year compares with a fall of 1·5 per cent. in parcels and of 6 per cent. in general merchandise receipts.

Tonnage originating exceeded the 1948 figure by 1·9 per cent., with a rise of 4·8 per cent. in the North Eastern, and a fall of 3·6 per cent. in the Scottish Region. This was due largely to increased coal tonnages, with a rise of 8 per cent. in the Western Region, reflecting an increase, both seasonal and absolute, in coal production. Mineral tonnages similarly increased by 4·3 per cent., with a 10 per cent. increase in the North Eastern Region, the result of increased steel production.

Passenger revenue for the month of August was 3 per cent. less than last year, despite a 6·5 per cent. rise in passenger-journeys, due to the higher proportion of excursion and cheap day tickets issued. The increase in total train-miles over 1948 was by 2·6 per cent., compared with a 5·2 per cent. increase for the preceding period. The proportion of empty train-mileage, both passenger and freight, remained about the same.

Freight train speed dropped from 8·7 m.p.h., for the preceding period, to 8·4 m.p.h., the same as in 1948. The average wagon load at starting point maintained, at 8·2 tons, the improvement over the preceding period and over last year. Coal consumption rose to 59·7 lb. per engine mile, but was still over 2 lb. below last year's figure. There was little change in the rolling stock repair position.

London Transport railway passenger journeys increased by 2·0 per cent. over the 1948 figure, and by 7·5 per cent. over the preceding period; in comparison, car-miles exceeded the 1948 figure by only 1·35 per cent.

Inland Water Transport tonnages increased over the preceding period, but were 10 per cent. less than in 1948.

* British Transport Commission Statistics, 1949. Series No. 10. Period to October 9. London: British Transport Commission. Price 1s.

STAFF

—	Commission's Head Office	British Railways	London Transport	British Road Services (Road Haulage)	Road Passenger (Provincial and Scottish)	Hotels & Catering	Ships, Vessels & Marine	Docks, Harbours, Wharves, and Inland Waterways	Railway Clearing House	Common Services: Commercial Advertisement	Total
No. of employees	212	632,055	100,266	59,366	56,578	17,042	5,810	25,071	660	170	897,230
Inc. or dec. ...	+6	−3,221	−179	+114	−1,034	−135	−435	+47	Nil	Nil	−4,837

1. BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

—	Four weeks		Inc. or dec.	Aggregate for forty weeks		Inc. or dec.
	To Oct. 9, 1949	To Oct. 3, 1948		1949	1948	
	£000	£000	£000	£000	£000	£000
British Railways—						
Passengers	8,962	9,722	− 760	92,150	99,146	− 6,996
Parcels, etc., by passenger train... ...	2,293	2,326	− 33	22,213	22,493	− 280
Merchandise	6,095	6,485	− 390	61,716	63,602	− 1,886
Minerals	2,336	2,287	+ 49	22,470	21,703	+ 767
Coal & coke	5,258	5,318	− 60	51,758	49,503	+ 2,255
Livestock	164	186	− 22	979	840	+ 139
	25,108	26,324	− 1,216	251,286	257,287	− 6,001
British Railways—						
C. & D. and other road services ...	673	679	− 6	6,616	6,629	− 13
Ships and Vessels	977	973	+ 4	8,821	7,902	+ 919
London Transport—						
Railways	1,101	1,095	+ 6	11,030	11,167	− 137
Buses & coaches	2,511	2,519	− 8	24,342	24,403	− 61
Trams & trolleybuses	866	881	− 15	8,441	8,653	− 212
	4,478	4,495	− 17	43,813	44,223	− 410
British Road Services—						
Freight charges, etc.	3,945	—	—	23,459	—	—
Road Passenger Transport	2,982	2,873	+ 9	28,052	27,335	+ 717
Docks, Harbours & Wharves	906	850	+ 56	8,410	7,762	+ 648
Inland Waterways	121	102	+ 19	1,177	1,021	+ 156
Hotels & Catering	1,098	1,081	+ 19	10,304	10,265	+ 39

2. BRITISH RAILWAYS

(A) Passenger Journeys Originating in the Month of August

—	Region												Total	
	London Midland		Western		Southern		Eastern		North Eastern		Scottish			
	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.
Ordinary fares	1,099	−21·74	783	−12·26	2,448	−1·51	1,033	−13·47	167	−31·57	287	−40·19	5,817	−13·18
Monthly returns	4,814	−20·53	2,395	−6·57	7,527	−13·49	3,667	−20·27	628	−17·62	1,128	−12·78	20,159	−15·92
Excursion, weekend, cheap day, etc.	6,706	+82·24	3,443	+42·67	5,343	+53·81	3,597	+109·80	2,091	+62·05	1,911	+131·89	23,091	+72·38
Workmen	5,395	−3·86	1,571	−1·64	6,126	−4·16	3,212	−0·19	821	−5·61	855	−0·56	17,980	−2·17
Other descriptions ...	1,212	−12·73	924	−4·82	1,491	−9·32	746	−13·75	345	−19·81	392	−17·41	5,110	−11·49
Season tickets	3,255	−2·28	1,773	+26·15	10,370	+7·85	3,490	+2·47	798	+24·52	3,330	−4·59	23,016	−5·15
Total	22,481	+6·77	10,889	+10·63	33,305	+4·73	15,745	+5·08	4,850	+14·44	7,903	+6·62	95,173	+6·54

(B) Freight Tonnage Originating

—	Region												Total	
	London Midland		Western		Southern		Eastern		North Eastern		Scottish			
	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.
Merchandise	1,384	+1·12	758	−6·94	277	−14·59	622	−4·78	599	+3·19	542	−5·28	4,182	−3·05
Minerals	1,629	−1·24	713	+4·75	110	+0·36	774	+7·28	915	+10·00	673	−8·25	4,814	+4·32
Coal & coke	4,254	+3·15	2,150	−8·06	284	−8·00	2,073	−3·44	2,571	+3·52	1,451	−7·33	12,783	−2·84
Livestock	29	−8·20	17	+12·58	5	−12·77	3	−7·69	11	−7·76	42	−16·37	107	−9·14
Total	7,296	+1·70	3,638	+3·94	676	−3·76	3,472	+2·66	4,096	+4·82	2,708	−3·63	21,886	+1·91

(C) Net Ton Miles

—	Region												Total	
	London Midland		Western		Southern		Eastern		North Eastern		Scottish			
	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.
Merchandise & livestock ...	189,052	−8·66	103,190	−0·96	25,737	−9·68	81,484	−7·64	53,317	−17·14	76,904	−9·77	529,684	−4·84
Minerals	137,940	−6·13	77,795	−2·92	14,731	−9·18	88,580	−5·16	34,072	−2·57	40,204	−5·65	393,322	−0·59
Coal & coke	301,772	−0·59	141,955	−12·31	30,175	−8·54	176,126	−3·31	69,169	−3·04	62,683	−5·38	781,880	−1·02
Total, all classes of traffic ...	628,764	−1·29	322,940	−6·16	70,643	−2·58	346,190	−4·84	156,558	−4·32	179,791	−7·37	1,704,886	−0·97

(D) Train Miles

—	Region												Total	
	London Midland		Western		Southern		Eastern		North Eastern		Scottish			
	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.	000	Per cent.
Coaching train miles														
Steam—														
Loaded	4,416	−1·90	3,138	−8·13	1,591	−2·47	2,727	−5·31	1,044	−1·74	1,826	−2·72	14,742	−3·95
Empty	153	−8·41	152	−10·26	61	−2·53	106	−13·91	5	−4·84	62	−3·41	579	−6·87
Total loaded & empty ...	4,569	−2·10	3,290	−8·23	1,652	−2·27	2,833	−5·61	1,089	−1·87	1,888	−2·51	15,321	−4·06
Electric—														
Loaded	450	−2·31	—	—	2,991	−7·24	37	−72·95	94	−2·55	—	—	3,572	−6·87
Empty	18	−8·06	—	—	73	−9·30	4	−114·07	9	−11·33	—	—	104	−5·56
Total loaded & empty ...	468	−1·86	—	—	3,064	−7·29	41	−16·20	103	−1·16	—	—	3,676	−6·83
Freight train miles—														
Loaded	3,012	−3·37	1,763	−8·22	538	−0·11	1,704	−0·39	921	−3·23	1,378	−6·16	9,316	−0·43
Empty	525	−4·35	203	−4·55	16	−45·14	344	−3·21	214	−7·68	206	−6·22	1,508	−2·00
Total loaded & empty ...	3,573	−3·52	1,966	−7·83	554	−0·83	2,048	−0·20	1,135	−0·99	1,584	−6·17	10,824	−0·65
Total train miles	8,574	−0·30	5,256	−8·08	5,270	−4·97	4,922	−3·62	2,327	−1·41	3,472	−1·64	29,821	−2·62

(E) Freight Train Miles per Train Engine Hour

Region													Total	
London Midland		Western		Southern		Eastern		North Eastern		Scottish			
1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948
7·15	7·32	9·31	9·46	8·80	8·79	8·26	8·16	10·28	10·15	10·02	9·57	8·42	8·42

(F) Locomotive Coal Consumption

—	Region												Total	
	London Midland		Western		Southern		Eastern		North Eastern		Scottish			
		Per cent.		Per cent.		Per cent.		Per cent.		Per cent.		Per cent.		Per cent.
Tonnage consumed (000's)	341	−2·74	175	−3·41	77	−1·21	194	−4·36	88	−0·69	160	−9·28	1,035	−2·70
Lb. per engine mile ...	62·02	−2·87	50·48	−2·51	54·35	−0·72	61·74	−5·02	59·95	−1·41	68·14	−6·12	59·69	−3·62

(G) Rolling Stock Position

—	Operating stock	Number under repair	Available Operating stock	Serviceable stock in 1948
Locomotives	19,943	3,775	15,680	16,016
Coaching vehicles	56,121	5,330	50,791	49,394
Freight wagons	1,126,711	125,057	1,001,654	1,044,230

3. INLAND WATERWAYS

Tonnage of traffic and ton miles

—	Tonnage	Per cent.	Ton miles	Per cent.
	000		000	
General merchandise	305	−18·50	4,890	−6·98
Liquids in bulk	132	+ 1·34	3,173	+1·39
Coal, coke, patent fuel & peat	426	− 6·55	6,817	+0·46
Total	863	−10·13	14,880	−1·93

4. LONDON TRANSPORT

(A) Passenger Journeys Originating

—	Number	Per cent.
	000	
Railways	49,227	−2·02
Buses & coaches	217,003	+1·16
Trams & rolleybuses ...	93,342	−0·71
Total	359,572	−0·78

(B) Rail and Road Car Miles

—	Miles	Per cent.
	000	
Railways	18,018	+1·35
Buses & coaches	24,164	−0·93
Trams & trolleybuses ...	8,655	−1·36
Total	50,837	−0·21

Notes and News

Draughtsmen Required.—Senior and junior draughtsmen are required, with experience in the design of diesel-electric locomotives. See Official Notices on page 663.

Thos. Cook & Son Ltd. Dramatic Society.—A mystery play by Mr. Wilfred Massey, "John Marlow's Profession," is to be presented by the Thos. Cook & Son Ltd. Dramatic Society at the Rudolf Steiner Hall, London, on December 15, 16 and 17, at 7 p.m.

B.T.H. Birmingham Office.—On November 7, the staff of the Birmingham district office of the British Thomson-Houston Co. Ltd. was installed in more commodious premises at Geoffrey Buildings, John Bright Street, Birmingham, 1; the telephone number, Midland 6335, remains unchanged.

British Railways Stand at Smithfield.—An inquiry bureau is to be provided by British Railways at the Smithfield Club Show which takes place in London at Earls Court from December 5 to 9. The office will be staffed by representatives prepared to answer inquiries regarding the transport of passengers as well as freight and livestock.

L.M.A. Mission in India.—In our November 11 issue we reported the sending of a mission to India by the Locomotive Manufacturers' Association of Great Britain to secure British technical assistance for the Chittaranjan locomotive works. An agency message from New Delhi states that talks have begun between the Indian Railway Board and the mission, which is now in New Delhi.

Rebuilt Metropolitan Line Car.—The London Transport Metropolitan Line experimental car No. 17000, which has been in service with lateral seating and side gangways, has been refitted to provide a centre gangway with three seats abreast on one side and two on the other. The total number of seats is 53, and, as shown in the accompanying illustration, two different heights of seat back have been used. The fluorescent lighting and the air distribution fans remain unaltered, and renumbered 17001, the car is now in use on the Watford service. A description, with illustration, of the car as previously constructed appeared in our issue of February 1, 1946.

Derailment near Newmarket.—The Eastern Region main line between Ely and Bury St. Edmunds was blocked on the night of November 25-26 when seven wagons and the guard's van of a goods train were derailed near Newmarket. Five of the derailed wagons fell down the embankment, though no one was hurt.

Colonial Engineering Service.—A vacancy exists for an assistant locomotive superintendent, between 25 and 35 years of age, on the Gold Coast Railways. Candidates must be British subjects, and have served an apprenticeship in a railway workshop or with a firm of locomotive builders, and have had subsequent experience in a supervisory capacity in the workshops or running department of a railway. See Official Notices on page 663.

Research and Production Engineering.—A meeting is to be held at the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, on Tuesday December 6, at 2.30 p.m., to discuss research and production engineering. The meeting is being held at the suggestion of Sir Claude Gibb, who will be in the Chair, and has the object of drawing the attention of industry to the vital part that production engineering research can take in increasing productivity without increasing costs. The platform party will include Lord Riverdale of Sheffield, Sir Lionel Kearns, Sir Holland Goddard, Sir William Stanier, and Mr. H. H. Harley. Chairmen and directors of some 300 engineering firms have been invited to the meeting and representatives from a number of professional institutions will be present. After introductory remarks by Sir Claude Gibb, Dr. D. F. Galloway, Director of Research of the Production Engineering Research Association of Great Britain, will give an illustrated talk, which will be followed by a discussion. It is stated that admission will be by invitation card only and application should be made to Sir Claude Gibb, Managing Director, C. A. Parsons & Co. Ltd., Heaton Works, Newcastle-on-Tyne, 6.

London Midland Region (London) Orchestral Society.—On Friday, December 16, the London Midland Region (London) Orchestral Society is presenting a vocal and instrumental concert in the former shareholders' meeting room, Euston Station, commencing at 7.15 p.m.

Institution of Locomotive Engineers.—Mr. E. Kressig will read a paper on "Lightweight Railway Rolling Stock" before the Institution of Locomotive Engineers, on December 14. The meeting will be held at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W.1, at 5.30 p.m.

Railway Students' Association.—At a meeting of the Railway Students' Association to be held at the London School of Economics, Houghton Street, Aldwych, W.C.2, at 6 p.m., on December 14, Mr. R. W. Wilson, Comptroller, British Transport Commission, will read a paper on "Accounting and Financial Structure of the British Transport Commission."

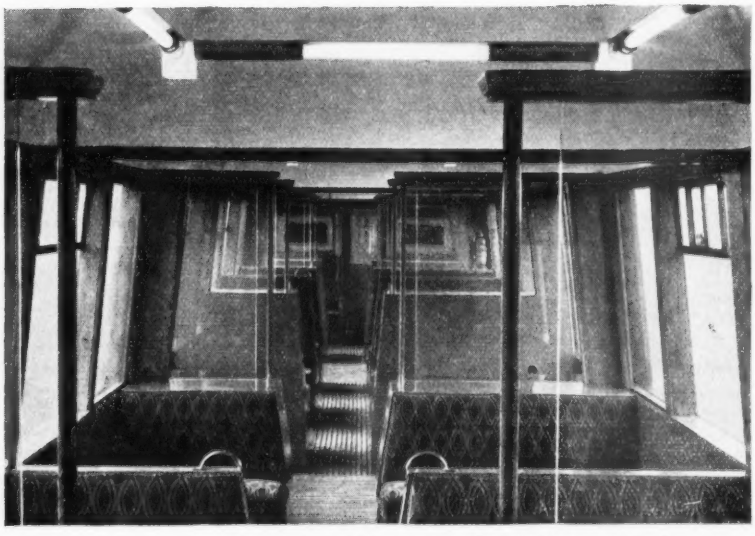
Italian Accident Caused by Landslide.—On November 22, an express ran into a landslide on the line between Savona and Narigotti, after emerging from a tunnel. The driver and fireman were killed and two dead and ten injured passengers were removed from the wreckage by the next day. The locomotive and two coaches rolled down a mountainside on to a road.

Institution of Civil Engineers Lectures for Boys.—As in previous years, Christmas lectures are being arranged at the Institution of Civil Engineers for boys, primarily between the ages of 13 and 17 years. The first lecture will be given by Mr. H. Shirley Smith, on "The Wonders of Big Bridges," on Friday, December 30, at 3 p.m. The second lecture will be given by Mr. C. W. Knight, on "The Building of Dams," on Monday, January 2, 1950. Application for tickets, which are free, should be made to the Secretary of the Institution.

Closing of Stations, Scottish Region.—As from December 5, Gatehouse-of-Fleet Station, Scottish Region, will be closed completely. Passengers for Gatehouse town will be booked to Kirkcudbright Station, whence bus services are available. Parcels and goods traffic will be collected and delivered to Gatehouse town by road vehicles based on Kirkcudbright. It is announced, also, that passenger services on the Haddington branch will be withdrawn on December 5. Bus services are available between Haddington and Edinburgh and Dunbar. Parcels and miscellaneous traffic for Haddington will be conveyed by rail to Longniddry, and thence by road motor or freight train service.

Christmas Train Services.—The following train services will operate in England and Wales during the Christmas holidays:—Christmas eve, many extra long-distance trains and reduced business services; Christmas day and Boxing day, Sunday service with modifications; December 27, weekday services with reductions in suburban areas, but many extra long-distance trains. Restaurant and buffet cars will be included in most long-distance

Metropolitan Line Car Reconstructed



London Transport, Metropolitan Line, car No. 17000 *which has been refitted to provide a centre gangway (see paragraph above)*

OFFICIAL NOTICES

None of the vacancies on this page relates to a man between the ages of 18 and 50, inclusive, or a woman between the ages of 18 and 40, inclusive, unless he, or she, is excepted from the provisions of the Control of Engagement Order, 1947, or the vacancy is for employment excepted from the provisions of that Order.

SENIOR and Junior Draughtsmen required, with experience in the design of diesel-electric locomotives. Men with sound steam and/or electric traction experience will be considered. Experience of bogie design would be an advantage. Reply particulars of training, experience, salary required to Box 545, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY STORE METHODS. By W. H. Jarvis Great Western Railway. The necessity for training officers—Organisation of stores department—Stores accounts. Cloth. 7¼ in. by 5 in. 116 pp. With diagrams. 4*s*. By post 4*s*. 3*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BRITISH WORK ON PERSIAN RAILWAYS. The achievements and difficulties of the R.Es. during the 15 months in which they laid the foundation for effective aid to Russia. Reprinted from *The Railway Gazette*, February 2 and 16, 1945. Price 1*s*. Post free 1*s*. 2*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

THE RAILWAY HANDBOOK provides the railway student with a collection of useful statistics and information relating to the railways of Great Britain and Ireland. In addition, in matters of international interest, such as speed and electrification progress, the book extends its scope to cover the whole world in order to present a complete picture of these increasingly-important developments. 120 pp. Dy. 8vo. Paper covers. Price 5*s*. By post 5*s*. 3*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

His Majesty's Colonial Service

THE COLONIAL ENGINEERING SERVICE

A VACANCY exists for an Assistant Locomotive Superintendent, Gold Coast Railways. Qualifications required are Associate Membership of the Institution of Mechanical Engineers, or degrees or diplomas recognised by that body as granting exemption from Parts A and B of its examination. Candidates must be British subjects, physically fit, and between the ages of 25 and 35. They must have served an apprenticeship in a railway workshop or with a firm of locomotive builders and have had subsequent experience in a supervisory capacity in the workshops or running department of a railway. The appointed officer will be responsible to the Senior Locomotive Superintendent for the control of staff engaged in the maintenance, running and repair of locomotives, carriages and wagons, and for the maintenance and repair of cranes, tugs, launches, pumping plant and slipway. Appointment will be on probation for permanent and pensionable employment within the incremental salary scale £510 to £1,000 (basic) per annum, plus cost-of-living allowance of 15 per cent. of basic salary, point of entry depending on age, civil experience and length of approved war service. An expatriation allowance varying from £150 to £300 per annum is also payable. Terms of appointment include free medical attention, partly furnished Government quarters, if available, at a rent of £60 to £90 per annum, free passages once each way each tour for the officer, and if married, for his wife, an outfit allowance on first appointment if salary does not exceed £720 per annum (basic) and home leave on full pay after tours of approximately 18 months, at the rate of 7 days for each month of resident service. Intending candidates should write at once to the DIRECTOR OF RECRUITMENT (COLONIAL SERVICE), COLONIAL OFFICE, Sanctuary Buildings, Great Smith Street S.W.1, stating age, professional qualifications and brief details of experience, and quoting the reference No. 27325/12.

TECHNICAL SALES REPRESENTATIVE required for service in Midlands and North by manufacturers of Locomotive & Carriage Specialities. Salary according to qualifications, which could with advantage include experience of Locomotive and Carriage design and/or construction. Apply in writing stating age and giving details of previous experience to: Box 534, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

THE EVOLUTION OF RAILWAYS. Second edition, revised and enlarged. By Charles E. Lee. Traces the germ of railways back to Babylonian times. Cloth. 8½ in. by 5½ in. 72 pp. Illustrated. 6*s*. By post 6*s*. 4*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

MECHANICAL APPLIANCES FOR HANDLING RAILWAY TRAFFIC. By G. Bulkeley. An explanation of the employment of mechanical apparatus for handling and carting general goods. Cloth. 7½ in. by 5 in. 132 pp. Illustrated. 5*s*. By post 5*s*. 3*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

4-8-2 CLASS "15F" LOCOMOTIVE FOR THE SOUTH AFRICAN RAILWAYS. The latest examples of these main-line passenger and freight locomotives have been built by the North British Locomotive Co. Ltd. Reprinted from *The Railway Gazette* of September 20, 1946. Price 2*s*. By post 2*s*. 2*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Method. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20*s*. By post 20*s*. 6*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

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trains and seats will be reservable. Cheap Day tickets will be issued throughout the holiday in most districts, and workmen's tickets will be available in the normal way on Boxing day and the following day (as well as on Christmas day where they are normally issued on Sundays). Sailing tickets will not be required on the Irish routes this year, except for passengers travelling from Holyhead to Dun Laoghaire (Kingstown) between December 21 and 24 inclusive.

Beyer-Garratt Locomotives for South America.—The Antofagasta (Chili) & Bolivia Railway has placed an order with Beyer, Peacock & Co. Ltd., for six Beyer-Garratt articulated locomotives of the 4-8-2 + 2-8-4 type. These locomotives will be the most powerful metre-gauge locomotives in the world, and are arranged for oil burning, total weight approximating 180 tons.

Permanent Way Institution, York Section.—At a meeting of the York Section of the Permanent Way Institution, on November 8, Mr. J. Taylor Thompson, President of the Permanent Way Institution, gave an address on "Engineering Works in the North Eastern Region during the Past 25 Years." The address covered a wide range of civil engineering works carried out in the L.N.E.R., North Eastern Area, and since nationalisation, and included widening schemes on the main line between York and Northallerton, and the reconstruction of several bridges as the result of road widening schemes, as well as new marshalling yards and bridges required to facilitate the handling of traffic during the last war. Mr. Taylor Thompson described work made necessary by bomb damage, and referred to developments in the design of locomotive depots and carriage works, such as the building shop at York. In conclusion he mentioned the remodelling of notable junctions, such as that at Church Fenton, and the laying of the first stretch of 109 lb. flat-bottom rail near Alne. The lecture was illustrated by a large number of lantern slides. Towards the conclusion of the meeting, members paid tribute to the work carried out by Mr. Taylor Thompson as President of the Permanent Way Institution, during which time he has visited 22 of the 24 Sections located at various centres; by the end of the year he will have completed his visits to all the Sections.

Commission for Travel Agents.—In response to recent allegations that British Railways was discriminating among travel agents in the payment of commission, the Railway Executive has stated that the arrangement under which certain ticket agents receive a supplementary commission, was made before the date of nationalisation and expires at the end of this year. The question of future arrangements is now under consideration.

The Need for Increased Canadian Freight Rates.—Mr. F. J. Gemmell Smith, Public Relations Officer, Canadian National Railways, recently addressed the Carlisle & District Transport Club on "The Canada of Today," and introduced three films produced by the C.N.R. After outlining the prosperity of Canada, he said that the Canadian railways were loading today almost as much as during the peak years of the war. Although not at present making much money, the railways were operating with the lowest freight rates in the world, and rates should be adjusted to enable them to earn sufficient revenue from the heavy traffic carried to place them on a sound economic basis.

Closing of Bopeep Tunnel, Southern Region.—Engineering works in Bopeep Tunnel, St. Leonards, have necessitated the closing of the railway between Hastings and St. Leonards (West Marina), and Bopeep Junction to Crowhurst, from November 27, until further notice. After the exceptionally dry summer, abnormally wet weather caused slight settlement to take place at one point, and repairs to the brickwork are now being undertaken. The tunnel, which is 1,318 yd. long, is situated immediately to the west of St. Leonards (Warrior Square) Station, and was opened on February 13, 1851. Trains from London to Hastings, *via* Tunbridge Wells, have been diverted from Crowhurst to Bexhill (West), and the electrified services from London and Brighton, *via* Lewes, are terminating at St. Leonards (West Marina). Special bus services for passengers holding railway tickets are in operation between Hastings and Crowhurst, and Hastings and St. Leonards and Bexhill.

W. G. Bagnall to Build Diesel-Electric Locomotives.—The firm of W. G. Bagnall Limited, Castle Engine Works, Stafford, will commence the manufacture of diesel-electric locomotives early next year. This project will be undertaken in conjunction with its associated company, the Brush Electrical Engineering Co. Ltd., and during the past two years Bagnalls have carried out important works extensions in preparation for the new programme. Steam locomotive production will continue at the Castle Engine Works.

Southern Region Lecture & Debating Society.—At the Chapter House, London Bridge, on November 9, British Railways, Southern Region, Lecture & Debating Society was addressed by Mr. J. P. Maitland, Running Shed Superintendent, Nine Elms. Mr. Maitland's subject was "Locomotive Exchanges," and after an introduction by Mr. T. E. Chrimes, Superintendent of Motive Power, Southern Region, who was in the chair, he outlined the history of locomotive exchanges in Great Britain since 1870, when trials were arranged between the L.S.W.R. and the S.E.R. Reference was also made to the trials of a L.B.S.C. "Terrier" in France, and of the visit to Paris of the Stirling 4-4-0 No. 240, *Onward*. Mr. Maitland referred to the 1909 locomotive trials between a Marsh "13" class 4-4-2 tank engine and the L.N.W.R. "Precursor" class 4-4-0 *Titan*, and to the trials between the G.W.R. *Polar Star* and the L.N.W.R. *Worcestershire*. After mention of the L.N.E.R./G.W.R. exchanges of 1925, Mr. Maitland dealt in some detail with the 1948 exchanges, mentioning both the technical aspects of these exchanges and the various difficulties which had to be overcome before the exchanges took place, as

well as the administrative arrangements necessary to ensure the smooth running of the trials.

Cross-Channel Travel Affected by French Strike.—On November 25 more than 3,000,000 workers in France declared a 24-hr. token strike. The French National Railways services were entirely suspended, but arrangements were made to convey cross-Channel passengers from the ports to Paris. Passengers were diverted from the Newhaven-Dieppe to the Dover-Calais service. The "Golden Arrow" reached Victoria in the evening with only twelve passengers.

Forthcoming Meetings

December 2 (*Fri.*).—Scottish Society of Students of the Locomotive, at the Boardroom, Regional Offices, 302, Buchanan Street, Glasgow, C.2, at 7.30 p.m. "Locomotive Superheating," by Mr. M. Smith.

December 5 (*Mon.*).—Society of Engineers, in the apartments of the Geological Society, Burlington House, London, W., at 5.30 p.m. "Welding Research and Practice in the U.S.A.," by Dr. H. G. Taylor.

December 5 (*Mon.*).—Institute of Transport, Metropolitan Section, at Livingstone House, Broadway, London, S.W.1, at 5.30 for 6 p.m. "The Railway (London) Plan," by Mr. Evan Evans.

December 6 (*Tue.*).—Institute of Transport, Midlands Section, at the Imperial Hotel, Birmingham, at 6.30 p.m. Visit of President. "Suggested Outline for a Canal Transport Policy," by Brigadier-General Sir H. Osborne Mance.

December 8 (*Thu.*).—Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 5.30 p.m. "Technical Considerations Affecting the Development and Design of Electrical Control Gear for Machine Tools," by Mr. A. R. Thorne.

December 8 (*Thu.*).—Engineers' Guild, Metropolitan Branch, at the Lighting Service Bureau, 2, Savoy Hill, London, W.C.2, at 6 p.m. Discussion: "Statutory Registration of Engineers."

December 8 (*Thu.*).—British Railways, Western Region, London Lecture & Debating Society, and British Railways, Southern Region, Lecture & Debating Society, in the Clerks' Dining Club, Bishop's Bridge Road, Paddington, at 5.45 p.m. Debate: "That a greater measure of decentralisation in railway administration will lead to greater efficiency."

December 8 (*Thu.*).—Irish Railway Record Society. Display of Railway Films.

December 9 (*Fri.*).—Institution of Railway Signal Engineers, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 6 p.m. "Speed Control Signailing for Close Headway Working," by Mr. W. Owen.

December 9 (*Fri.*).—Railway Club, 57, Fetter Lane, London, E.C.4, at 7 p.m. "Reminiscences of the Midland & Great Northern Joint Railway," by Mr. A. J. Wrottesley.

December 9 (*Fri.*).—Institution of Railway Signal Engineers, in the London Transport Executive Signal School, Earls Court Station, London, S.W.5, at 6.15 p.m. "Electrical and Mechanical Interlocking," by Mr. W. H. Such.

Railway Stock Market

The best feature of markets has been a further rally in British Funds, sentiment being helped by Sir Stafford Cripps' latest statement. Gilt-edged failed to hold best levels, however, and industrial shares were easier in many cases, the £20,000,000 deficit for British Transport forecast for the current year and the rise in freight charges dominating sentiment. These increases mean still higher costs for industry and illustrate the increasingly difficult conditions which many companies face. At the time of going to press, British Transport 3 per cent. (1978-88) stock has remained steady at the higher level of 89½ touched earlier in the week, having taken its cue from the general trend in gilt-edged stocks.

The knowledge that the Government broker is prepared to support the market, if necessary, has prevented any large scale bear selling of gilt-edged, and consequently moderate buying tends to have a disproportionate influence on prices. This is in sharp contrast to the position before the intervention of the Government broker, when bear selling made jobbers mark prices down steadily from day to day. Owing to prevailing uncertainties and the imminence of the general election, investors are showing a waiting attitude and the volume of business is often insufficient to test prices adequately. The very poor response to the £10,000,000 South Africa loan illustrates prevailing caution. Nevertheless, the new £5,000,000 Port of London Authority 3½ per cent. stock (1966-68), issued at 99, is expected to command a small premium when dealings start, assuming the gilt-edged market to hold its recent further improvement.

Foreign rails attracted only moderate attention, but United of Havana stocks fluctuated sharply, awaiting news of the purchase negotiations. The 1906 debentures, after changing hands over 27, came back to 26. There was also much activity in National Railways of Mexico in anticipation of an official statement on latest developments, but earlier gains have not so far been fully held. The 4 per cent. (1957) bonds were 21½. Canadian Pacifics remained active, but after their recent sharp gain came back to 26½; the preference stock was 63½ and 4 per cent. debentures 92½.

Leopoldina stocks looked steadier. The prevalent view is that the debentures, and possibly also the preference stock, will prove to be undervalued at current levels; but until an official statement of the proposed share-out terms for the individual stocks, a waiting attitude seems likely. Great Western of Brazil £10 ordinary units have remained around £6¼, which is well below the pay-out expected when the purchase money is eventually received from Brazil. Earlier in the year, when the purchase was announced, the directors of Great Western of Brazil estimated that after paying off the debenture stock and providing for interest arrears, there was likely to be a balance to provide not less than £7¾ per £10 of ordinary stock, £1 more than the current market price; but fears that the purchase money may not be received until next year have led to a fair amount of selling in the past few months.

Antofagasta remained more active, although best prices were not fully held, the ordinary being 8¾ and the preference 45½. Brazil Rail gold bonds eased to 43, and San Paulo 10s. units were quiet at 14s. Paraguay Central 6 per cent. prior lien debentures have sold around 39, Leopoldina ordinary was steadier at 9, the preference 27, the 4 per cent. debentures 88 and the 6½ per cent. debentures 128. Leopoldina Terminal 5 per cent. debentures sold at 98½ and the ordinary units at 2s. 9d. Manila "A" debentures were 85 and the preference shares 7s. 6d.

Road transport shares kept steady generally, and B.E.T. stock at £1,430 regained part of an earlier decline. West Riding were 68s., Southdown 122s. 6d. and Lancashire Transport 78s. 6d. Iron and steel shares attracted profit-taking after their recent rally, but later on buyers appeared, Dorman Long strengthening to 31s. 3d., Colvilles to 34s. 9d., John Summers to 30s. 3d., while in other directions T. W. Ward were better at 54s. 3d.

Shares of locomotive building and engineering companies remained firmer, with Vulcan attracting attention up to 18s. 6d. Beyer Peacock were 19s. 3d., North British Locomotive 19s. 4½d., Wagon Repairs 17s., Charles Roberts £6½, and North Central Wagons 12s. 3d. Gloucester Wagons at 50s. 6d. were steady, Central Wagons 90s., and Birmingham Carriage & Wagon 30s. 9d. Hurst Nelson were 58s. 9d.

Traffic Table of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffics for week: Total this year	Inc. or dec. compared with 1947/48	No. of week	Aggregate traffics to date: Total 1948/49	Increase or decrease
South & Central America	Antofagasta... ...	811	20.11.49	£ 71,110	+ £ 7,020	46	£ 3,102,580	+ £ 536,250
	Costa Rica	281	Sept., 1949	30,929	— 3,154	13	102,621	— 8,998
	Dorada	70	Oct., 1949	31,848	— 908	43	296,878	+ 23,637
	Inter. Ctl. Amer. ...	794	Sept., 1949	$929,624	— $15,705	39	$9,530,893	— $584,055
	La Guaira	22¾	Oct., 1949	$91,504	— $18,157	43	$1,058,982	+ $10,465
	Nitrate	382	15.11.49	18,459	+ 6,161	46	403,291	+ 131,997
	Paraguay Cent. ...	274	18.11.49	G$130,262	+ G$23,686	20	G$2,866,084	+ G$844,227
	Peru Corp. ...	1,059	Aug., 1949	246,670	+ 74,521	9	473,214	+ 122,033
	Salvador	100	Aug., 1949	c81,000	+ c 1,000	9	c173,000	+ c8,000
	Taltal	154	Oct., 1949	15,870	+ 7,900	18	45,070	+ 13,340
	United of Havana ...	1,301	11.6.49	$231,311	+ $14,746	49	$13,733,928	— $4,659,951
Canada	Canadian National †	23,473	Oct., 1949	15,116,335	— 513,665	43	136,964,335	+ 3,151,670
	Canadian Pacific †...	17,037	Sept., 1949	10,784,666	— 548,333	39	89,239,000	+ 4,043,333
Various	Barsi Light* ...	167	Oct., 1949	27,240	+ 637	30	206,347	+ 24,652
	Egyptian Delta ...	607	20.10.49	19,474	— 1,637	29	363,390	— 7,627
	Gold Coast ...	536	Oct., 1949	217,578	— 497	32	1,625,728	+ 213,529
	Mid. of W. Australia	277	Sept., 1949	31,775	+ 2,186	13	81,475	— 771
	Nigeria	1,900	Sept., 1949	485,713	+ 73,445	25	2,703,823	+ 86,332
	South Africa ...	13,347	5.11.49	1,481,695	+ 100,195	31	46,451,491	+ 4,703,704
	Victoria	4,744	July, 1949	987,736	— 320,973	4	—	—

* Receipts are calculated @ 1s. 6d. to the rupee † Calculated at $3 to £1